
FINANCIAL PLAN

Presented to the

CALIFORNIA HIGH-SPEED RAIL AUTHORITY



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Center for the Continuing Study of the California Economy

CH2M HILL

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D) INTRODUCTION AND EXECUTIVE SUMMARY

The Plan of Finance examines the potential revenue sources for the construction and operations of high-speed rail (HSR) in California. The plan provides a strategy for financing the system using a statewide, temporary sales tax.

Operations and Maintenance requirements of the system will be met from net operating revenues of the system.

While the system will generate a significant operating surplus, and this surplus may be used to either reduce the initial temporary tax or provide an ongoing funding annuity for transportation in California, project revenues themselves are insufficient to fund the system in the absence of a dedicated temporary revenue source.

Additional revenues in the form of interest earnings, concession and vendor payments, leveraged lease proceeds, donated right of way and parking are documented and projected.

To facilitate the sixteen-year construction schedule, tax exempt debt in the form of Tax Exempt Commercial Paper (TECP) and Sales Tax Revenue Bonds are utilized.

The financial plan was developed by Public Financial Management and attached as Appendices A and B. Several firms, however, contributed to specific elements of the plan.

The sales tax revenue forecast was developed by the Center for the Continuing Study of the California Economy. Capital cost projections and construction schedule were developed by Parsons Brinkerhoff and the ridership and patronage revenue forecast were developed by Charles River Associates. Forecasts for freight revenues were developed by CH2M HILL. Supplementary information regarding the freight forecast is attached as Appendix D.

Consistent with the policy of the Authority, the plan does not assume revenues from joint development or tax increment growth at station sites. These revenue sources are preserved for the benefit of local agencies within the HSR corridor. E&Y Kenneth Leventhal has prepared an analysis documenting the revenue potential from joint development attached as Appendix C.

The schedule, environmental process, project cost and financing are predicated on the use of a design-build construction approach. The organization of this procurement approach is discussed in a companion report prepared by the law firm of Nossaman Guthner Knox and Elliott.

The plan provides analysis of options that assume the temporary tax is put in place in 2000 and in 2006. The plan also considers methods to use project revenues to remove the temporary tax earlier than initially imposed.

II) FUNDING OF THE HIGH-SPEED RAIL SYSTEM

The financial plan for implementing the HSR system has been developed to reflect both the overall capital costs, anticipated construction schedule, and operating requirements for a 670 mile high speed rail system in California. The alignment reflected in the financial plan assumes routing through the Grapevine corridor. To the extent that alternative corridors are used, or this corridor is substantially modified in terms of total distance, station stops, travel time or other factors, the conclusions in the financial plan may change.

The total cost in 1999 dollars assuming this alignment is \$24.97 billion. Parsons Brinkerhoff has estimated a 16-year construction schedule. This produces a funding requirement schedule as shown in the following chart:

UNINFLATED CONSTRUCTION SCHEDULE
(\$Millions)

Fiscal Year End	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	Total
Program Environmental	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
Pre. Engineering/EIS/EIR	0	0	75	100	100	75	0	0	0	0	0	0	0	0	0	0	350
Right of Way	0	0	0	0	0	0	270	541	379	379	852	0	0	0	0	0	2,422
Station Costs	0	0	0	0	0	0	0	81	161	161	0	0	225	225	225	225	1,301
Line Construction	0	0	0	0	0	0	517	775	775	1,361	1,688	1,688	1,688	1,688	845	0	11,025
Vehicles	0	0	0	0	0	0	95	95	95	95	0	0	191	191	191	192	1,145
Trackwork	0	0	0	0	0	0	21	64	64	64	130	261	261	261	261	132	1,520
Electrification	0	0	0	0	0	0	19	59	59	59	123	245	245	245	245	121	1,421
Sig. and Communication	0	0	0	0	0	0	25	77	77	77	160	318	318	318	318	161	1,848
Support Facilities	0	0	0	0	0	0	29	52	52	15	0	42	42	42	23	0	296
Program Implementation	0	0	0	0	0	0	181	193	351	399	508	471	508	508	363	145	3,626
Total Capital Costs	10	10	75	100	100	75	1,159	1,937	2,014	2,610	3,460	3,025	3,477	3,477	2,471	975	24,974

Source: Parsons Brinckerhoff Quade & Douglas, Inc.

The Need For External Funding

The first step in developing a financial plan is assessing the ability of the project to be financed without a public funding source. In the context of the HSR system, this means funding from farebox revenues, ancillary development, private equity, or other related sources.

Project operating surpluses are estimated to be significant. As shown in the following chart, the system will produce surpluses beginning in the first full year of operation of \$171 million, increasing to \$358 million in FYE21. The total revenue surplus through the first ten years of operation is estimated to be \$3.3 billion.

SUMMARY OF OPERATING INCOME
UNINFLATED (\$000s)

	FYE17	FYE18	FYE19	FYE20	FYE21	FYE22
Total Operating Revenues*	\$721,968	\$821,371	\$880,311	\$894,270	\$909,065	\$924,698
Operating Expenses	<u>550,984</u>	<u>550,984</u>	<u>550,984</u>	<u>550,984</u>	<u>550,984</u>	<u>654,533</u>
Net Operating Income	\$170,984	\$270,387	\$329,327	\$343,286	\$358,081	\$270,165
	FYE23	FYE24	FYE25	FYE26	Total	
Total Operating Revenues*	\$940,357	\$956,044	\$971,760	\$987,506	\$9,007,349	
Operating Expenses	<u>578,533</u>	<u>578,533</u>	<u>578,533</u>	<u>578,533</u>	<u>5,723,584</u>	
Net Operating Income	\$361,824	\$377,511	\$393,227	\$408,974	\$3,283,766	

* Includes freight and concession revenue.

The following chart shows the magnitude of the revenue surplus relative to nationally known transportation facilities:

TRANSPORTATION FACILITY OPERATIONS (\$000s)*

	Pennsylvania Turnpike Commission	Triborough Bridge and Tunnel Authority**	Oklahoma Turnpike Authority	Golden Gate Bridge
Year Ending	FYE98	1998	1997	FYE98
Operating Revenues	\$346,561	\$928,308	\$118,325	\$49,816
Operating Expenses	<u>\$165,763</u>	<u>\$208,190</u>	<u>\$32,713</u>	<u>\$13,083</u>
Operating Income	\$180,798	\$720,118	\$85,612	\$36,733

* Excludes depreciation and amortization.

** Includes all bridges and tunnels under Authority's jurisdiction

As impressive as the HSR project surpluses are, they are not sufficient to support project revenue debt in the amount needed to finance the construction of the system. Furthermore, the use of a project revenue financing structure would be prohibitively costly due to the sixteen-year construction schedule and the need to capitalize interest during the construction period.

Assuming a 6.60% tax-exempt cost of funds, the first year net operating income could support up to \$1.8 billion in debt, issued upon project completion. In the fourth year of operation, following patronage ramp-up, net operating income could support \$3.7 billion in debt.

Unlike tax-exempt debt, private equity would insist upon a minimum after tax return of between 15% to 20%. This effectively reduces the equity that can be supported to approximately \$808 million.

As detailed in the Leventhal report, opportunities for ancillary development at station sites are estimated to range from \$726,000 - \$1,828,000 annually. This revenue consists of additional tax revenue that will be generated from each of the system's 23 station sites. This revenue, however, is not sufficient to fund the system's capital requirements.

In summary, although the project produces an unprecedented operating surplus, a source of public funding is required to finance the system's construction. It is important to note, however, that no ongoing public subsidy is required to operate the system.

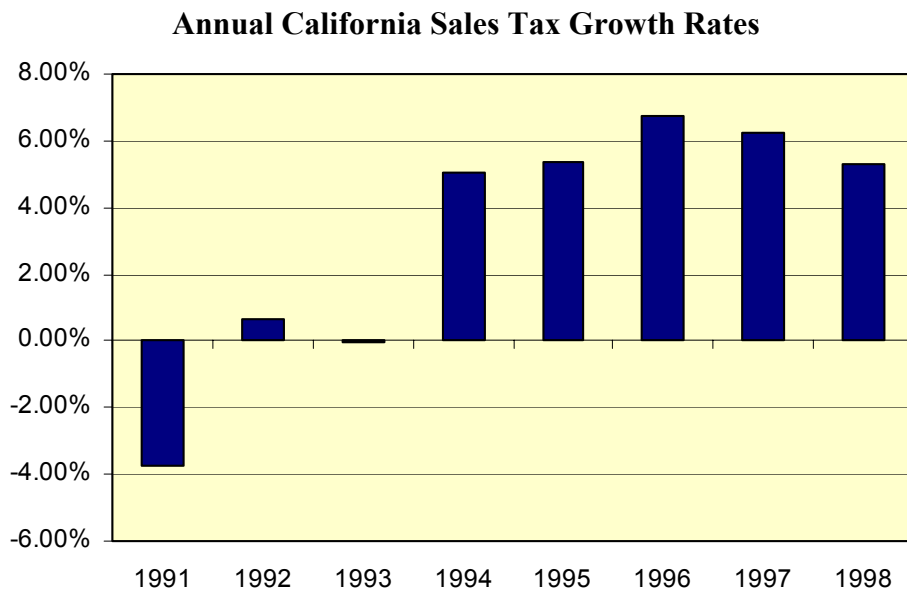
Primary System Funding Sources - The HSR plan utilizes the following funding sources:

Sales Tax

Consistent with the policies adopted by the Authority, the plan recommends the use of a temporary statewide sales and use tax as the primary vehicle for funding the system.

Sales Tax Revenue Forecast

The sales tax revenue forecast is one of the most significant factors influencing the feasibility of the HSR project. Too low of a forecast can result in recommending an excessive tax level, while overestimating tax revenues can leave the financing plan short of sufficient revenues to complete the system. Although generally considered a stable revenue source, state-wide sales tax revenues can fluctuate significantly and are highly impacted by a number of economic and demographic variables. The following chart showing the recent sales tax growth rates in the State demonstrates this potential variability:



Sales Tax Revenue Forecast Methodology

The statewide projections of sales tax revenue for the HSR project were prepared by the Center for Continuing Study of the California Economy (CCSCE) using the methodology described below.

Step One: California's projected growth trends. The first step in projecting California's job, population and income growth is to identify the expected growth of jobs, population and income in the nation to 2020.

CCSCE used the latest middle series U.S. population projections from the Census Bureau. Job and income projections were developed by extending the latest U.S. Bureau of Labor Statistics national projections from 2006 to 2020.

Step Two: California's population growth depends on the state's job growth. California's job growth depends on two principal factors:

- 1) the amount and type of U.S. job growth
- 2) the share of U.S. jobs (by industry) that locate in California

CCSCE followed standard regional economic analysis methodology by identifying the industries in California's economic base and separately projecting California's share of U.S. jobs and output in each industry.

Step Three: Income growth depends on the growth in jobs and projected productivity growth. Productivity growth (the growth in output per worker) is the fundamental determinant of long run trends in real wages and income.

Step Four: Taxable sales growth depends on the growth in real income and trends in the share of income spent on taxable items. There has been a long term decline in the share of income spent on taxable items. As a result, the growth in taxable sales has remained well below the growth in income in California.

The growth of e-commerce and the uncertainty about whether and how much e-commerce transactions will be taxed are key assumptions in projecting future trends in the share of income spent on taxable items in California.

Step Five: Projections of taxable sales in current dollars were developed using the projections of real (i.e., constant dollar) taxable sales growth and an assumption of 2.5% annual inflation between 1999 and 2020.

The long term projections used in the high-speed rail analyses assume that there will be periods of slower and faster growth at times during the 1999-2020 period. The long term growth rates include the assumption that recessions will continue to occur periodically in the U.S. and

California economies. However, no projections were made as to when periods of slower or faster than average growth would occur in the 1999-2020 period.

California's Economic Performance to 2020

Job growth in California is expected to outpace the national average in the period to 2020. California's economic base is concentrated in industries with strong long term growth prospects in the national and world economy. Moreover, California firms have a high and, in many cases, rising share of jobs and output in these high growth sectors.

After four straight decades of high job growth relative to the national average, the California economy experienced a period of recession from 1990 to 1994. Job losses in defense related manufacturing, military base closures and a two-thirds reduction in new construction caused California job levels to remain below the 1990 peak as late as 1994 while the U.S. economy was already in the third year of recovery. For the 1990-94 period job levels fell by an average of 0.4% per year in California while growing by 1.0% in the nation.

California Job Growth Average Annual Change (1970-1998)

	<u>1970s</u>	<u>1980s</u>	<u>1990-94</u>	<u>1994-98</u>
California	3.3%	2.5%	-0.4%	2.7%
United States	2.3%	1.8%	1.0%	2.2%

Source: U.S. Bureau of Labor Statistics, California Employment Development Department, CCSCE

The California economy posted strong job gains between 1994 and 1998. Led by gains in high tech manufacturing, computer services and Internet related activities, motion pictures and multimedia, and diverse manufacturing sectors such as apparel, furniture, and toys, jobs expanded by 2.7% per year in the 1994-98 period. California's job growth exceeded the 2.2% national average during this period.

Job estimates through May 1999 put California on pace for another 3%+ job gain in 1999.

The rate of job growth is expected to slow in both the state and nation between 1999 and 2020. The principal factor is demographic trends as the baby boom generation reaches retirement age. As a result labor force and job growth rates will fall sharply after 2010.

California is expected to outpace the nation in job growth to 2020 based on the strong position of California firms in the leading growth sectors. CCSCE's projections of California job growth are shown below.

Projected Employment (Millions)

	<u>1998</u>	<u>2010</u>	<u>2020</u>	<u>Average Annual Growth Rate</u>	
				<u>1998-2010</u>	<u>2010-2020</u>
California	15.5	18.6	20.2	2.0%	0.8%
United States	138.9	154.1	166.0	1.4%	0.7%

Source: CCSCE

Population Growth

CCSCE prepares population projections based on the state's projected job growth. Population projections are prepared in two main steps:

Projections of working age (16+) population are prepared based primarily on an analysis of labor force participation rate trends by age and ethnic group. The projected working age population is that which provides the labor force to meet projected job growth with an unemployment rate of 5.5%.

Fertility and mortality assumptions (births and deaths) follow the trends projected by the California Department of Finance.

The California Department of Finance has also recently issued new population projections prepared by their demographic model. There are methodological differences between the CCSCE and DOF population projection models but the actual statewide population projections for 2010 and 2020 are very similar as shown below.

Projected California Population (000s)

	<u>1998</u>	<u>2010</u>	<u>2020</u>	<u>Average Annual Growth Rate</u>	
				<u>1998-2010</u>	<u>2010-2020</u>
CCSCE	33,494	40,260	44,963	1.5%	1.1%
DOF	33,494	39,958	45,449	1.5%	1.3%

California's population is projected to increase from 33.5 million in 1998 to near 40 million in 2010 and near 45 million in 2020. For the 1998-2020 period the state's population is projected to increase by between 11.5 million (CCSCE) and 12.0 million (DOF).

Population growth rates drop after 2010. Population growth will slow gradually in both the state and nation as birth rates decline, the population gets older and the number of deaths increase, and the share of women in childbearing ages declines.

Total Personal Income Projections

Income growth is the principal determinant of the long term growth in taxable sales. Long term trends in income growth determine the ability of households to spend on various types of consumption including items subject to sales tax in California.

Long term trends in productivity growth are, in turn, the principal determinant of income growth. Productivity growth provides the basis for increases in real wages and profits.

The U.S. economy has experienced significantly higher productivity growth during the past three years (1995-98) than at any time since the early 1970s. Productivity growth has averaged 2.2% since 1995 which is well above the growth rates for the 1980s. In the early 1990s real per capita income in California fell despite modest productivity gains because the state economy was in a recession which didn't end until 1994.

California real per capita income grew rapidly during the past three years based on large productivity increases and a fall in unemployment rates.

Productivity and Per Capita Income Growth (Average Annual Growth Rate)

	<u>1980-90</u>	<u>1990-95</u>	<u>1995-98</u>
U.S. Productivity	1.0%	1.1%	2.2%
California Per Capita Income	0.9%	-0.1%	2.5%

Source: Productivity – U.S. Bureau of Labor Statistics; Per Capita Income – U.S. Department of Commerce, CCSCE

It is uncertain how much of the recent gains in productivity growth will continue over the next 20 years. CCSCE prepared alternative projections of productivity growth and per capita income to reflect a range of plausible assumptions about future productivity trends.

California Per Capita Income (1998\$)

	<u>Average Annual Growth Rate</u>				
	<u>1998</u>	<u>2010</u>	<u>2020</u>	<u>1998-2010</u>	<u>2010-2020</u>
Low	\$26,930	\$31,075	\$33,987	1.2%	0.9%
Baseline	\$26,930	\$32,968	\$37,885	1.7%	1.4%
High	\$26,930	\$35,796	\$44,065	2.4%	2.1%

For the baseline income projections CCSCE assumed that productivity would grow at 1.7% annually to 2010 – down from the 2.2% average for 1995-98 but above the long term average in the 1970s and 1980s. The 1.7% annual productivity growth assumption results in a projected growth rate of 1.7% per year for real (i.e., inflation adjusted) per capita income growth.

Between 2010 and 2020 CCSCE assumes that productivity growth rates will fall as the economy adjusts to the large wave of retirements as the baby boom generation reaches age 65. Per capita income growth will fall from 1.7% per year to 1.4% per year in the baseline alternative.

CCSCE projects a range of real per capita income growth from 1.1% to 2.4% annually between 1998 and 2010 and from 0.9% to 2.1% per year between 2010 and 2020.

Total personal income projections were developed by multiplying projected per capita income and projected population. The income projections shown below are in 1998\$ and, therefore, do not include the impact of future inflation.

**Total Personal Income in California
(Billions of 1998\$)**

	<u>Average Annual Growth Rate</u>				
	<u>1998</u>	<u>2010</u>	<u>2020</u>	<u>1998-2010</u>	<u>2010-2020</u>
Low	\$902.0	\$1,251.1	\$1,528.2	2.8%	2.0%
Baseline	\$902.0	\$1,327.3	\$1,703.4	3.3%	2.5%
High	\$902.0	\$1,441.2	\$1,981.4	4.0%	3.2%

Total personal income (in 1998\$) is projected to increase by 3.3% annually between 1998 and 2010 in the baseline alternative. The projected growth is below the 4.0% annual income growth since 1995 but above the 1.9% annual growth for the 1990-98 period.

After 2010 the rate of income growth falls for two reasons – 1) per income growth declines and 2) the rate of population increase falls as well. Between 2010 and 2020 total personal income (in 1998\$) increases by 2.5% per year.

CCSCE prepared a range of income growth projections. The 1998-2010 annual growth rates range from 2.8% to 4.0% and for 2010-2020 the range is from 2.0% to 3.2% annual growth.

Ratio of Personal Income Spent to Taxable Items

The rate of growth in taxable sales depends on two factors – 1) the growth in personal income and 2) changes in the share of personal income spent on taxable items.

Taxable sales have grown more slowly than personal income in most years since 1979 as the share of income spent on taxable items has fallen steadily. The taxable sales/income share fluctuated between 46% and 50% during the 1980s before falling to near 40% during the early 1990s California recession. Since 1992 the share has remained near 40%.

Two factors pushed the ratio downward; an increasing share of income spent on housing and an increasing share of income spent on services. The fastest growth areas in personal spending have, therefore, been on non taxable items.

The growth in e-commerce is a new trend which could cause taxable sales to grow more slowly than income in the future. Many e-commerce transactions (i.e., purchases over the Internet) by California residents and businesses are not currently subject to sales tax.

There is a national debate underway on whether and how to tax Internet transactions. Since the volume of Internet sales is expected to grow rapidly from 1998 levels, the results of the debate over Internet sales taxation will have more of an impact on the volume of taxable sales in California.

CCSCE developed three alternative assumptions about trends in the ratio of taxable sales to income.

High – the ratio would remain at the 1998 level of 39.8%. This seems like a reasonable upper bound because a) the ratio has remained relatively stable since 1992 but b) the ratio has not risen consistently at any time since the late 1970s.

Baseline – the ratio falls from 39.8% in 1998 to 37% in 2010 and remains at 37% through 2020. It is reasonable to anticipate a continuation of the downward trend in the taxable sales/income ratio. A rising share of income is expected to be spent on services and other non-taxable items including e-commerce.

It is difficult to project the amount of decline with any certainty. The baseline assumption reflects CCSCE's judgment.

The baseline projections of taxable sales also include the assumption that tax policy will change at some time in the future to broaden the sales tax base. As a result the baseline projections show taxable sales growing at the same rate as income (in 1998\$) after 2010.

Low – The low projection of taxable sales assumes that the ratio of taxable sales to income will continue falling after 2010 and reach a level of 35% in 2020.

Taxable Sales Projections (Uninflated)

Projections of taxable sales were developed based on projections of total personal income and the share of income spent on taxable items.

Taxable Sales in California (Billions of 1998\$)			<u>Average Annual Growth Rate</u>		
	<u>1998</u>	<u>2010</u>	<u>2020</u>	<u>1998-2010</u>	<u>2010-2020</u>
Low	\$359.1	\$462.9	\$534.9	2.1%	1.5%
Baseline	\$359.1	\$491.1	\$630.3	2.6%	2.5%
High	\$359.1	\$573.3	\$788.8	4.0%	3.2%

In the baseline alternative, taxable sales (in 1998\$) are projected to increase by 2.6% annually between 1998 and 2010. This is below the 3.9% annual real increase since 1995 but well above the 0.7% per year growth for the 1990-98 period.

The 2.6% annual growth in taxable sales is lower than the baseline 3.3% annual income growth rate because the share of income spent on taxable sales is projected to fall through 2010. Between 2010 and 2020 both personal income and taxable sales are projected to grow by 2.5% annually in the baseline alternative.

In the low alternative taxable sales are projected to grow by 2.1% per year to 2010 and by 1.5% annually between 2010 and 2020. In the high alternative taxable sales are projected to grow by 4.0% per year to 2010 and by 3.2% annually between 2010 and 2020.

Taxable Sales Projections (Inflated)

Taxable sales projections in actual dollars (i.e., including the impact of inflation) are required for the HSR financing plan.

CCSCE was asked to develop projections of the inflation rate between 1998 and 2020 to use in preparing projections of taxable sales in current dollars. The annual rate of inflation has varied substantially in California over the past twenty years.

California Consumer Price Index (Average Annual Growth Rate)	
1979-1982	10.9%
1980-1990	5.1%
1990-1998	2.4%

CCSCE used an inflation assumption of 2.5% per year in developing projections of taxable sales in current dollars. CCSCE believes that the recent inflation experience is the most reasonable baseline assumption for future changes.

The rate of inflation affects both revenue and cost elements of high speed rail alternatives. It is important for the project analyses that consistent sets of inflation assumptions be applied to both costs and revenues. If consistent sets of inflation assumptions are used, the effects of using slightly higher or lower assumptions about future inflation rates should be small with regard to the net impacts on high speed rail alternatives.

**Taxable Sales in California
2.5% Annual Inflation (\$Billions)**

	<u>Average Annual Growth Rate</u>				
	<u>1998</u>	<u>2010</u>	<u>2020</u>	<u>1998-2010</u>	<u>2010-2020</u>
Low	\$359.1	\$622.5	\$920.8	4.7%	4.0%
Baseline	\$359.1	\$680.5	\$1,085.1	5.2%	5.1%
High	\$359.1	\$771.6	\$1,357.9	6.6%	5.8%

In the baseline alternative taxable sales in California increase from \$359.1 billion in 1998 to \$680.5 billion in 2010 and \$1,085.1 billion in 2020. This growth is equal to 5.2% annual gains between 1998 and 2010 and 5.1% yearly increases between 2010 and 2020. Taxable sales, including inflation, are projected to increase between 4.7% (low) and 6.6% (high) annually between 1998 and 2010 and between 4.0% (low) and 5.8% (high) annually between 2010 and 2020.

The plan uses the “Baseline Assumption” for modeling, however, it is important to note that revenues may be higher or lower based on the economic climates during the term of the tax.

Right of Way Dedications

Based on information from the engineering team and Authority staff, the plan assumes that 15% of the right of way is currently in public ownership and will be provided to the system at no cost. This amounts to a cost avoidance of \$363.5 million. The actual cost of publicly owned right of way should be formally assessed as part of the ongoing cost engineering of the project. Significant portions of the right of way presently known to be in public ownership include the Caltrain right of way on the San Francisco Peninsula, Caltrans right of way in the I-15 corridor, and certain Metrolink alignments. Additional information concerning the potential for donated right of way, and the issues involved in negotiating right of way dedications developed by Robinson & Pearman, LLP, is contained in the “Right of Way Shared Use Strategy” section of the Project Delivery Strategies report.

Leveraged Leasing of Rail Rolling Stock

When rail rolling stock is acquired by a tax exempt public entity, the public entity has no effective use for the tax benefits associated with ownership, including but not limited to the depreciation value of the equipment. In order to capture this value, various strategies have evolved which allow the potential tax benefits to be transferred to a private entity with a tax liability, either in the United States or in some other nation. There are many different structures that have been used to capture these tax benefits, and new structures are continually being created to maximize the benefit and ensure compliance with existing tax laws. When the tax benefits are transferred to a US entity, the transaction is generally known as a “domestic leveraged lease.” This strategy has been widely used by transit agencies throughout the country for many years. Tax benefit structures that have been used include Safe Harbor Leases (1980’s),

Pickle Leases (mid-1990's) and Leasehold Interest or LILO transactions (late 1990's). Among rail operators with experience in US leveraged leases are the New York MTA, Chicago RTA, Massachusetts Bay Transportation Authority, (Boston), Portland Tri-Met and Bi-State Development Authority (St. Louis). Within California, the LAMTA, San Diego MTDB, the Southern California Regional Authority (Metrolink), Peninsula Joint Powers Rail Board (CalTrain), Santa Clara VTA and North County Transit (Coaster) have concluded transactions.

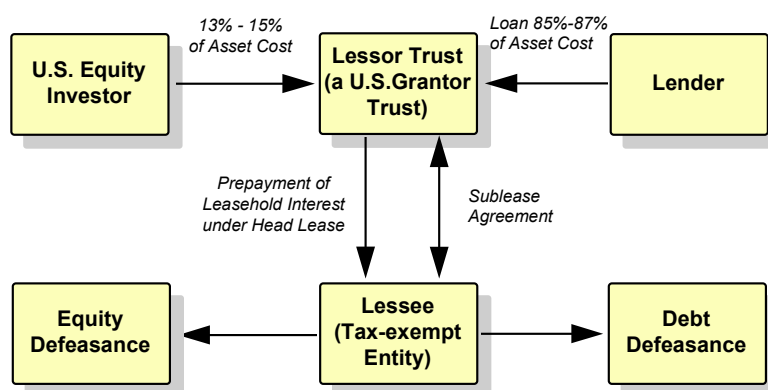
A similar approach to domestic leveraged leasing is known as cross border leasing. In a cross border transaction, the tax benefits are transferred to an entity with foreign tax liability. Cross border leasing has been widely employed by several US transportation providers. Rail equipment operated by Amtrak, New York MTA, Boston MBTA, Regional Transportation Authority of NE Illinois (Chicago), Port Authority of Allegheny County (Pittsburgh), and the Southeastern Pennsylvania Transportation Authority (Philadelphia) have all been placed in cross border leases.

Within California, the LACMTA Blue Line and certain San Diego Trolley equipment is subject to a Japanese Leveraged Lease; German Leveraged Leases have been employed for San Diego and Sacramento light rail equipment, and BART equipment is part of a Swedish Leveraged Lease.

While each lease structure has various implementation forms, the generic lease structure involves the sale or lease of equipment to an equity investor, and the set aside of the sale proceeds in an investment account sufficient to pay the lease or sub lease payments now due by the transportation provider. Because the amount of funds necessary to fund the investment account is less than the amount received as the purchase price, the difference becomes the cash benefit to the transportation agency.

The approach is shown on the following chart:

Basic Structure of a U.S. Leasehold



The amount of benefit received in a leveraged lease varies depending on the type of lease structure, age of equipment, remaining useful life, degree of specialization of the equipment,

currency considerations, available investment rates, and total size of the transaction. Generally speaking, current lease transactions are producing between 3% to 5% of the asset value. This value is lower than has been historically available but recent trends in tax law have substantially reduced the benefit to public agencies.

It should be noted that market conditions have substantially changed over 1999. The changes have been a function of recent legislative and IRS actions and the market's reaction to these steps. There are currently three main considerations that effect the level of benefit and even the ability to close successfully this type of transaction.

First, the most recent presidential budget creates an obstacle to the US leasing market. The Department of Treasury's General Explanations of the Administration's Revenue Proposals, in the section titled "Limit Inappropriate Tax Benefits For Lessors of Tax-Exempt Use Property," specifically suggests the banning of lease-leaseback transactions as of the enactment date of the legislation. The final budget has yet to be adopted, and it is not known at this time what effects the Revenue Proposals may have on leveraged leasing for the transit industry.

Second, the Treasury Department released Revenue Ruling 99-14 on March 11th, 1999. Rulings such as these are designed to be a statement of the Government's interpretation of existing tax law. This ruling described the leveraged lease structure in some detail, including typical loan and debt defeasance arrangements, equity defeasance arrangements and purchase options but left out many of the more technical features that equity tax counsel believe to be important. The Ruling generally questioned the "economic substance" of a leveraged lease: "Courts have refused to recognize the tax consequences of a transaction that does not appreciably affect the taxpayer's beneficial interest except to reduce tax." While the Ruling acknowledges that the IRS has, in other independent contexts, respected leveraged lease structural features such as in-substance defeasance, non-recourse financing and fixed-payment options, the Ruling argues that "viewed as a whole. . . the transaction should not be respected for tax purposes." As a result, this ruling raises specific concerns that may have an adverse impact on the ability to implement a leveraged lease.

Third, the IRS released regulations governing leveraged leasing in May. These regulations relate to Section 467 of the Code and govern the treatment of increasing or decreasing rents, or deferred or prepaid rent. These regulations along with the Revenue Ruling released on March 11th have decreased an agency's ability to implement a leveraged lease and reduced the corresponding benefit. The industry is still trying to sort through the full implication of these regulations. Law firms are attempting to structure a transaction that will be in compliance with the final regulations. It is worth noting that the original release of the proposed regulations was June 3, 1996, and the legal and lease industry has had significant time to digest the contents. Since the final regulations are similar in substance to the proposed regulations, there is every reason to believe that a revised structure may be possible.

For the purposes of this report, we have assumed that a leveraged lease producing a net present value benefit of 3.0% of the value of the rail rolling stock was implemented simultaneous with the delivery and acceptance of the vehicles. Assuming an estimated cost of vehicles of \$1.1

billion, such a lease would generate \$34.4 million in cash for the project. This should be considered as “private” funding for the project.

Vendor Financing

Vendor financing consists of project capital costs that are financed by system suppliers separately from the overall financing plan of the system. For a project such as the HSR system, vendor financing may be considered as a means to finance certain facilities which will benefit private concessionaires such as parking facilities and food and concession spaces in the stations, or as a means of financing deferred construction costs. Vendor financing may also be considered as means of financing the rolling stock acquisition or other capital costs depending on the structure of the ultimate construction/operations contract.

Typically, vendor financing is provided at the vendor’s cost of funds. This is usually a taxable cost of funds equal to the prime interest rate or prime plus a factor reflecting the vendor’s credit quality and banking relationship. In some cases, vendor financing can be enhanced by Import-Export Bank credit provided by sovereign Import-Export Banks. This is a particularly important tool for items such a rail equipment which have a world wide market. Even with enhanced Import Export Bank financing, however, the cost of funds for such a financing is generally significantly higher than the typical tax-exempt financing.

Because the cost of capital for a vendor to finance improvements is usually always higher than the cost of the state to finance on a tax-exempt basis, vendor financing should only be considered as a secondary funding source when a logical synergy exists between the system facility and the vendor’s operations. In order to minimize the projects overall financing costs, vendor financing should not be used in substitution of state financing for generic system components unless the state lacks adequate bonding authority or capacity.

In the plan of finance for the HSR system, we have identified two areas in which private vendor financing may be appropriate; These include parking facilities at the station sites and facility build-out of the concessionaire and vendor areas within the stations. By shifting the cost and development of these system facilities to private vendors through long term vendor contracts, the Authority can shift risks associated with vendor operations and better align the interests of the Authority with those of the private vendors.

The following provides a summary of the major vendor financing assumptions utilized in the financial plan:

- **Parking:** Parking operations are assumed to be contracted out to private vendors in exchange for up-front capital contributions. Based on fifteen year lease terms and a 15% required rate of return, the HSR parking operations are anticipated to yield \$330 million in capital contributions in FYE16, the final year of system construction.
- **Concessions:** Build-out of concessionaire facilities are assumed to be funded by private concessionaires on an “as needed” basis. As capital costs associated with concessionaire build-out are not included in the HSR system capital cost estimates presented in this financial plan, this funding is not shown as a source of project funding.

Operating Revenues

Although generally not available to finance construction, the operating revenues of the system as previously discussed are significant. Operating revenues fall into three primary categories:

- Concession/Parking Revenues
- Freight Revenues
- Passenger Revenues

Concession Revenues

Long-term leases with concessionaires and other station vendors provide a source of annual operating revenue. These leases would permit a variety of commercial activity, including: restaurants, snackbars; rental cars; newsstands; and pushcarts; among others. The structure through which these services can be provided at the various HSR stations can range from in-house operations to a master service contract with a private concessionaire. For the purpose of this financing plan, we have assumed that private concessionaires would enter into long-term triple-net lease agreements with each HSR station. In addition, concessionaires would be responsible for build-out of the concession areas provided by the stations as part of their long-term lease.

In order to estimate the projected triple-net lease revenue generated by the HSR stations, each station was classified based on average daily boardings into one of three station categories: 1) suburban stations; 2) urban stations; and 3) terminal stations.

Utilizing the station criteria and assumptions presented above, we evaluated the lease revenue generated at relevant train stations throughout the country. This evaluation included phone interviews with public transportation agencies as well as public and private station managers. Based on this evaluation, we anticipate that the HSR station categories could generate the following average annual triple net lease revenue in current (1999) dollars:

<u>Station Category</u>	<u>Number of HSR Stations</u>	<u>Annual Net Lease Revenue</u>
Suburban Stations	9	\$50,000
Urban Stations	10	\$150,000
Terminal Stations - (1)	3	\$275,000

(1) Los Angeles Union Station is privately managed and is therefore excluded from these estimates.

Based on the estimates presented above, the HSR stations are anticipated to generate approximately \$2.78 million dollars annually in current (1999) dollars. These revenues are assumed to track the general inflation rate of 2.50% annually.

As the locations and designs for the HSR stations have not yet been developed, we have made significant assumptions related to their operations. Specifically, we have assumed that the

concessions facilities would be located and designed to maximize the potential concession operations. Additionally, we have assumed that the station concession operations would not be limited to HSR patrons, but that each station could draw potential customers from the surrounding area (e.g. unrelated commercial and residential developments) as well as other transportation modes connected to the stations. To the extent that the HSR stations deviate from these critical assumptions, the station concession revenues presented in this financing plan could change materially.

Station Parking Revenues

Parking operations at HSR stations are estimated to generate revenue on an annual basis. As previously discussed in the “Vendor Financing” section of this report, the financing plan assumes that parking operations would be contracted out to private parking operators in exchange for up-front capital contributions. As such, no annual parking revenue has been incorporated into the financial plan.

Freight Revenues

Target Market For High Speed Rail - Freight consists of the movement of goods from sellers (origins) to purchasers (destinations). Typically, the good is transported from the seller’s building in some type of truck, which can range from a small single, axle vehicle to a large semi-trailer depending on the type of product being shipped. From there it either goes directly to a purchaser or to a distribution hub for sorting and repackaging. From there, goods will be transported either by truck, rail, air or ship. In order to compete in freight markets, the HSR system would need to have freight distribution capabilities at HSR station sites. Goods would be combined from multiple trucks, sorted, then placed into an appropriate system for loading onto and offloading from the train.

Assuming distribution facilities are established, the choice of mode depends on a number of factors including the type of goods being transported, the weight able to be carried by the mode of transport, and the cost of the mode of transport. The very nature of an HSR system implies a system better suited to carrying goods that require rapid service for relatively small, lightweight items. High Speed Rail is not a likely candidate to carry goods with a low value per pound. Thus, we believe the potential market for High Speed Rail is time-definite (express) delivery of mail and small parcels.

The Relative Competitiveness of High Speed Rail - To compete with other modes of freight transport, rail cars would either need to have dual passenger-freight capability or would need to have the ability to quickly couple and de-couple freight and passenger cars at various stops. Another option is using dedicated trains that run at off-peak (night) hours. An efficient loading mechanism, probably loading platforms with live floors would be needed at each station in addition to the distribution capabilities discussed above. The ability to compete depends on the eventual cost of transport by HSR compared to air. HSR also faces another constraint: the hub and spoke operations of the integrated express companies like Fed Ex and UPS. With this type of system in place, it may be less efficient to transport goods from a hub, to a second distribution facility at a rail station.

Current trends are for more and more time-definite goods being shipped by truck instead of existing rail services. Integrated operators are using more trucks than ever before. Using trucks, rather than airplanes, for “air” freight is a central feature both in the use of regional hubs and the adoption of distance-based pricing by integrated operators. All door-to-door service by air-freight companies also requires truck distribution at both ends of the air-freight shipment, thus reinforcing the trend toward using trucks for the middle portion of the delivery when cost-effective.) Integrated operators are increasingly using regional hubs and trucks for linehaul within a 300-400 mile radius of their air hubs as dictated by the relative operating economics of trucks versus aircraft. This trend is being driven in part because of legislation that took effect in January 1995 that totally deregulates intrastate trucking operations of the integrated carriers. Effective May 1998, UPS began offering day-definite service of all its business-to-business shipments moved through its ground system. Thus, for distances that can be covered by truck in one night (roughly 500 mi.), UPS ground delivery offers the same overnight delivery service provided by air networks at as little as ¼ the price.

For that reason, the most likely markets served by HSR would be to and from the system endpoints: San Francisco/Sacramento to/from Los Angeles/San Diego. These endpoints are 350-500 miles away and would likely be served by air freight, particularly in the future when freeway congestion is likely to increase in the metropolitan areas. For the purposes of this analysis, we will assume the market consists of time-sensitive small packages to and from the system endpoints that currently are transported by air.

California High Speed Rail Freight Forecast - CH2M HILL’s high speed rail forecast is shown in the following freight forecast table. As shown, operating income from freight in 1999 dollars is forecast to increase from \$4.1 million in fiscal year 2016 to \$34.1 million in fiscal year 2045. In current year dollars, operating income is forecast to increase from \$5.9 million in fiscal year 2016 to \$86.4 million in fiscal year 2045. The basis for this forecast follows.

Proforma 1999 Estimate - Lines 1 through 14 provides a proforma 1999 estimate i.e., the basis for the high speed rail forecast as if the system were operating today. Current revenues from U.S. air express (mail and parcels excluding heavy freight) is estimated to be \$27.5 billion. This estimate is based on data provided in company annual reports and industry projections. It is estimated that 12.7 percent of that revenue is derived from traffic originating in California based on California’s percent share of U.S. GDP (from Bureau of Economic Analysis data) resulting in total California air express revenues of \$3.5 billion.

On the basis of data found in the 1993 California Commodity Flow Survey, it is estimated that 12.5 percent of California’s freight revenues are from shipments of more than 100 miles. Based on California population and income statistics, CH2M HILL estimates that 50 percent of those shipments are to or from the four endpoint cities resulting in \$218.3 million in air express revenues between the four endpoint cities.

**California High Speed Rail Freight Forecast
(Thousands of Dollars)**

	FY 1999	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
1 Total US air express revenues	\$27,500,000										
2 % of US shipments in California	12.7%										
3 Total California Air Express Revenue	\$3,492,500										
4 % of CA. Originating freight shipped within state > 100 mi.	12.5%										
	\$436,563										
5 Percent of those shipments that move between 4 main cities	50.0%										
6 Air Express revenues from and to 4 main cities	\$218,281										
7 Long-distance air express transportation percent of revenue	15.0%										
8 Long-Distance air express transportation revenue	\$32,742										
9 Other mail (10%)	\$3,274										
10 Other freight (10%)	\$3,274										
11 Long-Distance air express and freight transportation market	\$39,291										
12 Market share for HS Rail	25.0%										
HS Rail Operating Revenue from freight	\$9,823										
13 HS Rail operating income percent of operating revenue	35.0%										
14 Total HS Rail operating income from freight	\$3,438										
15 Annual growth in shipments	5.0%										
16 Phasing (percent of total)		0%	50%	75%	100%	100%	100%	100%	100%	100%	100%
17 HS Rail operating income from freight (1999 dollars)	#	\$0	\$4,344	\$6,841	\$9,578	\$10,057	\$10,560	\$11,088	\$11,642	\$12,224	\$12,835
18 HS Rail deliveries (tons)		0	540	850	1,190	1,249	1,312	1,377	1,446	1,519	1,594
19 Annual price inflation	2.0%										
20 HS Rail operating income from freight (current dollars)	#	\$0	\$6,328	\$10,166	\$14,517	\$15,548	\$16,652	\$17,834	\$19,100	\$20,456	\$21,909

Source: CH2M HILL.

Totals may not add because of rounding.

California High Speed Rail Freight Forecast
(Thousands of Dollars)

	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035
1 Total US air express revenues										
2 % of US shipments in California										
3 Total California Air Express Revenue										
4 % of CA. Originating freight shipped within state > 100 mi.										
5 Percent of those shipments that move between 4 main cities										
6 Air Express revenues from and to 4 main cities										
7 Long-distance air express transportation percent of revenue										
8 Long-Distance air express transportation revenue										
9 Other mail (10%)										
10 Other freight (10%)										
11 Long-Distance air express and freight transportation market										
12 Market share for HS Rail										
HS Rail Operating Revenue from freight										
13 HS Rail operating income percent of operating revenue										
14 Total HS Rail operating income from freight										
15 Annual growth in shipments										
16 Phasing (percent of total)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
17 HS Rail operating income from freight (1999 dollars)	\$13,477	\$14,151	\$14,859	\$15,601	\$16,382	\$17,201	\$18,061	\$18,964	\$19,912	\$20,907
18 HS Rail deliveries (tons)	1,674	1,758	1,846	1,938	2,035	2,137	2,244	2,356	2,474	2,597
19 Annual price inflation										
20 HS Rail operating income from freight (current dollars)	\$23,464	\$25,130	\$26,914	\$28,825	\$30,872	\$33,064	\$35,411	\$37,925	\$40,618	\$43,502

Source: CH2M HILL.

Totals may not add because of rounding.

Total air express revenues include revenues for all functions of an air express carrier such as information systems, delivery by truck to a sorting center, sorting, loading to and unloading from an airplane, resorting, and delivery by truck to a customer. CH2M HILL estimates that 15 percent of total air express revenues would be associated with functions likely performed by the HSR operator including loading, unloading and long-distance transportation. It is also possible that once the system is operational, HSR would be an attractive mode of transport for mail and other freight or that some goods could be shipped to or from locations other than the system endpoints. Accordingly, it is estimated that an additional 20 percent could be realized by markets other than express deliveries to and from the four endpoint cities resulting in a total long-distance air express and freight transportation market of \$39.3 million.

Once the system was operational, CH2M HILL estimates that with attractive pricing HSR could attract 25 percent of the air express and freight transportation market between the endpoint cities resulting in \$9.8 million. Assuming a favorable allocation of system capital costs, CH2M HILL estimates a 35 percent operating income ratio for \$3.4 million in income from the transportation of freight.

Long-Term Forecast - The basis for the long-term forecast of HSR freight operating income is shown in lines 15 through 20 of Table 1. CH2M HILL forecasts 5 percent annual growth in air express shipments between the four endpoint cities throughout the forecast period. System revenues are forecasts to be phased in over a 2-year period: 50 percent in the first year of operations (fiscal year 2016), 75 percent in year 2 and 100 percent thereafter. CH2M HILL forecasts annual price inflation for express of 2 percent annually throughout the forecast period.

The forecast of freight deliveries in tons (line 18) is based on revenues per pound provided in annual reports of express freight companies.

Supplemental information regarding the research for the freight forecast is contained in Appendix D.

Passenger Revenues

Passenger revenues are based on projections by Charles River Associates using a fare schedule based on 50% of airfares between Los Angeles and San Francisco. The following table shows the projected ridership and revenues utilized in the financial plan.

SYSTEM OPERATING REVENUE PROJECTIONS
Uninflated

	<u>FYE17</u>	<u>FYE18</u>	<u>FYE19</u>	<u>FYE20</u>	<u>FYE21</u>	<u>FYE22</u>
Ridership (000s)	25,814	29,294	31,302	31,769	32,262	32,782
Revenue (\$000s)*	\$714,849	\$811,755	\$867,958	\$881,438	\$895,730	\$910,835
	<u>FYE23</u>	<u>FYE24</u>	<u>FYE25</u>	<u>FYE26</u>	<u>FYE27</u>	<u>FYE28</u>
Ridership (000s)	33,303	33,823	34,343	34,863	35,383	35,903
Revenue (\$000s)*	\$925,940	\$941,045	\$956,149	\$971,254	\$986,359	\$1,001,464

* Reflects passenger revenue only.

Source: Charles River Associates

The system ridership and passenger revenues reflect a “ramp-up” for system utilization. The financial plan assumes that revenues are 85% of projections in the first year, 95% of projections in the second year, and 100% of projections thereafter.

Interest Earnings

Critical to the financial plan is the assumption that revenues are dedicated to the system and that interest earnings on these funds are captured for the benefit of the system. These include general project cash balances, construction funds, and debt service reserve fund cash balances. It should be noted that while this is common for capital plans developed by “self-help” counties, many state programs see interest earnings accrue to the benefit of the state general fund. We recommend that the enabling legislation for HSR specifically provide for the capture and utilization of interest earnings on all funds. The following provides an overview for each of these cash balances and the assumptions used to calculate the related interest earnings.

General Cash Balances

General cash balances reflect the HSR project’s accumulated surplus revenue. This balance includes cash balances, annual sales tax revenue, transfers from operations, and other funding sources less debt service expense, capital costs, and other project expenses. The calculation for interest earnings on general cash balances do not include cash balances related to bond proceeds which are accounted for separately as interest earnings on construction funds.

Interest earnings on general cash balances are calculated annually as the average of the year’s beginning and ending balance (excluding debt proceeds) earning the State’s current Local Agency Investment Fund (LAIF) yield of 5.25%. This calculation is based in part on the assumption that on average, annual general cash balances accrue evenly throughout the year. Although the actual accumulation of general cash balances for any specific year may differ from this assumption, it does provide a reasonable estimate for calculating interest earnings on general cash balances over the life of the project. Through completion of the system’s construction in FYE16, interest earnings on general cash balances are projected to contribute approximately \$2.4 billion to the financial plan.

Construction Fund Cash Balances

Construction fund cash balances result from the unspent portion of various debt financing sources, including sales tax revenue bonds, commercial paper, and project revenue certificates. Interest earnings on construction fund cash balances are calculated as 50% of net proceeds earning the State's current LAIF yield of 5.25%. This calculation is based in part on the assumption that net proceeds will be drawn down evenly over a one year period. Although the actual drawdown of construction fund balances for any specific year may differ from this assumption, it does provide a reasonable estimate for calculating interest earnings. Through completion of the system's construction in FYE16, interest earnings on construction fund cash balances are projected to contribute approximately \$124 million to the financial plan.

Debt Service Reserve Fund Balances

Cash balances resulting from the deposit of debt service reserve funds (DSRF) into an escrow account generate interest earnings that will accrue to the benefit of the project. The DSRF is assumed to be established upon the issuance of debt and is not released until the principal is fully repaid. In order to comply with Federal arbitrage restrictions, DSRF balances are assumed to earn an interest rate equivalent to the bond yield. Through completion of the system's construction in FYE16, interest earnings on construction fund cash balances are projected to contribute approximately \$67.8 million to the financial plan.

Based on the interest earning assumptions presented above, project-wide interest earnings on cash balances through completion of the system's construction in FYE16 are estimated to be approximately \$2.6 billion to the financial plan.

Debt Financing

The financial plan attempts to minimize the impact of debt financing, *consistent with the goal of maintaining the estimated construction schedule*. The types of debt instruments are discussed below:

Sales Tax Bonds

Sales Tax Revenue Bonds are well understood by the rating agencies, credit enhancers and investors. Sales Tax Revenue Bonds have traditionally performed well in the municipal market. This is especially true in California where the double tax-exempt nature of Sales Tax Bonds makes them a popular investment, particularly when issued from jurisdictions with strong underlying economies.

Sales tax revenue bonds are attractive to investors, in part, because these bonds are generally backed by levies on a broad range of items and are supported by the overall economy. Typically, the ratings are investment grade within the "A" or "BBB" categories, although some reach as high as "AAA" with bond insurance and "AA" without credit enhancement. Ratings primarily reflect the health of the underlying local economy and the structure of legal bond covenants.

Before assigning a rating, the rating agencies evaluate the stability, diversity and magnitude of the pledged revenue stream plus the level of coverage of future maximum annual debt service and the bond covenants restricting additional debt issuance.

Rating agencies will typically use the following factors to assess the Authority's credit ratings on any sales tax revenue bonds issued for the HSR project:

1. **Economic Concerns:** Rating agencies evaluate the diversity and growth of an economy. The emphasis is the breadth of the sales tax base, focusing on factors that could cause fluctuations in sales tax receipts. Other factors reviewed are growth rates and diversity of retail outlets. An area with diverse employment and many retail outlets generates stable sales tax receipts and may support relatively high bond ratings, depending on coverage ratios and legal covenants.
2. **Historical Data:** Rating agencies and investors will want to examine the stability and growth in the local economy, taxable sales, and sales tax rates. In addition, relevant demographic data for the state will be evaluated, including, population growth and income statistics. A minimum of five years historical data will be evaluated to identify and trends that may have positive or negative credit rating impacts.
3. **Additional Bonds Test:** Additional bonds test specify that historical revenues must cover future maximum annual debt service by a set percentage after a bond sale. Higher additional bonds tests and coverage levels lead to higher ratings unless the economy becomes a limiting factor. In the financing plan presented in this report, a 1.30x and 1.15x debt service coverage ratio was used for senior lien and junior lien debt respectively.
4. **Cushion Against Declines:** Built into the additional bonds test coverage factor is a sufficient cushion against revenue declines at least equal to that experienced in the past, plus an extra safety margin.
5. **Implications of Sales Tax Growth Trends:** Since sales tax receipts are inflation driven, rating agencies see this as one of the strongest credit features of sales tax revenue bonds. Revenues and debt service will increase in inflationary periods, even if a local economy does not grow in real terms. The opposite will occur if prices fall, however. As it relates to the Authority, inflexibility in raising tax rates during a revenue downturn makes having a fully funded debt service reserve fund very important. A debt service reserve fund cushions against the possibility that pledged revenues, temporarily, will not cover debt service in a recession.

The stability and reliability of the revenue stream will determine the ultimate amount of interest required on project related debt. Accordingly, the stronger and more secure the base revenue source, the lower the interest related costs for project construction. Conversely, the more speculative the base revenue source, the higher the borrowing costs. Although taxable sales in California have fluctuated significantly in response to economic conditions, rating agencies generally look favorably on states such as California with a broad and diverse economic base and

retail sector. Additionally, debt secured by sales tax revenue has successfully been used by numerous transportation agencies to fund major capital improvement programs throughout California and the nation.

Tax Exempt Commercial Paper

Tax-Exempt Commercial Paper (TECP) is the municipal market version of a financing instrument that has been widely used by corporations for decades. These securities, which have a maximum maturity of 270 days, are used to meet a program's ongoing operating or capital needs. Maturing TECP can be repaid from the proceeds of sale of new TECP ("rolled over") or from other funds provided by the issuer. As TECP obligations accumulate, the issuer can structure a more permanent financing and redeem the outstanding principal. Due to the costs of structuring such a program, TECP is usually used only when the issuer's program needs exceed \$50 million.

TECP are typically unsecured obligations payable from a specified source of funds. Buyers of TECP are not long-term investors and do not seek or require a pledge of assets or funds by the issuer as security. If they have concerns about the issuer they simply do not buy the notes or they will require that the notes be backed by a bank letter of credit. Generally, liquidity for a TECP program is provided by an irrevocable letter of credit, a revolving credit agreement, or a line of credit.

TECP offers the issuer a number of benefits, including an ability to generate cash quickly, interest rates that are typically lower than long-term rates, and simplicity in documentation. In addition, its greater flexibility in setting maturities and determining rates has made TECP a popular short-term debt instrument that is often used in lieu of BANs, TRANs, and GANs or to defer the issuance of long term fixed rate debt.

III) IMPLEMENTATION SCENARIOS

The Authority and the legislature will consider the timing of seeking voter approval for a sales tax funding source. One option is to seek voter approval for a ¼ cent sales tax during the 2000 election cycle. The second option is to seek voter approval for a ½ cent sales tax in 2006, following the completion of the environmental process and substantial preliminary engineering.

There are advantages and disadvantages with each alternative as shown in the following chart:

2000 Funding Scenario	
<i>Advantages</i>	<i>Disadvantages</i>
<ul style="list-style-type: none">• Funding is secured and project may be expedited• Revenue collection during engineering stage allows for additional \$1.3 billion in interest earnings offsetting tax requirement• Lower tax rate required• Shorter financing term minimizes interest costs	<ul style="list-style-type: none">• Risk that project costs will exceed twenty year yield of tax• Risk that construction delay will extend opening beyond tax cut off• Environmental alternatives not yet fully evaluated• Schedules public vote prior to full investigation of engineering issues and final alignment

2006 Funding Scenario	
<i>Advantages</i>	<i>Disadvantages</i>
<ul style="list-style-type: none">• Costs, alignment and environmental issues well known prior to tax vote• Greater accuracy in revenue projections and requirements• Tax in place for a shorter term• Better coordinated with design build procurement strategy	<ul style="list-style-type: none">• Requires higher tax rate• Places substantial investment in preliminary engineering “at risk” for future funding vote• Not constraining revenues “up front” may encourage project cost expansion• Funding for preliminary engineering takes funds from other state or Federal projects and currently no categorical funding programs address projects of this nature

To assist the Authority and the legislature in developing an implementation strategy, we have designed two financial plan alternatives. The first assumes voter approval in 2000. The second assumes voter approval in 2006.

The details of each scenario are described below:

Funding Authorization In 2000 Scenario

This scenario assumes that voter approval for a temporary ¼-cent increase in the statewide sales and use tax is obtained in the November 2000 election. The tax would be imposed beginning in April 2001. During the fiscal year ending June 30, 2002, the first full fiscal year of the tax, it is estimated that \$1.0 billion (1999 dollars) will be generated.

Under this scenario, the tax is would have a 20-year term with a termination date of March 31, 2021. In today’s dollars, the tax will generate \$25.95 billion over this period.

During the first six years of project implementation, revenues are expected to significantly exceed expenditures which are essentially limited to costs associated with environmental review and preliminary engineering. This allows a significant cash balance to accumulate which generates approximately \$767 million in interest income prior to the start of the system's physical construction in FYE17. The early collection of tax proceeds has another advantage in that it allows debt financing to be substantially reduced both in amount and in term. As a result, costs associated with debt service are minimized.

Debt is not required for the project until fiscal year ending 2012. During this year, revenues are estimated to be \$1.3 billion, far short of the projected project costs of \$3.1 billion.

The first tranche of debt will be tax-exempt commercial paper. TECP is used because of its flexibility in ramping up to meet project requirements, flexibility in amortizing principal and low interest costs. A \$1 billion TECP program has been recommended for the project. This is comparable to the state's current TECP program.

TECP will be structured as a variable rate obligation, on a subordinate lien basis to the proposed sales tax revenue bonds. Consistent with adopted Authority policy, the plan of finance assumes an all-in cost of TECP of 3.95%.

The plan also includes three tranches of fixed rate, sales tax revenue bonds. This first tranche is issued in FYE12 as senior lien bonds in the amount of \$139 million. This issue is amortized over the remaining nine years of the sales tax.

An additional \$4.1 billion in senior lien sales tax bonds are issued in FYE 2014 and are amortized over the remaining seven years of the sales tax.

The cumulative debt service of the two tranches of senior lien bonds will have an aggregate coverage factor of at least 1.30x, the minimum coverage recommended in the plan. Should it be necessary, an additional tranche of subordinate lien bonds with an aggregate cumulative debt service coverage factor of at least 1.15x could be issued.

The aggregate debt service and projected coverage factors are shown in the following table:

**DEBT COVERAGE RATIO
UNINFLATED (\$000s)**

	FYE12	FYE13	FYE14	FYE15	FYE16	FYE17	FYE18
Sales Tax Revenue	\$1,309,375	\$1,343,823	\$1,378,684	\$1,413,958	\$1,449,648	\$1,485,755	\$1,522,281
Sr. Debt Service (FYE12)	\$7,563	\$7,563	\$7,563	\$7,563	\$32,451	\$32,451	\$32,451
Sr. Debt Service (FYE14)	0	0	213,286	213,286	944,849	944,849	944,849
Senior Debt Service	\$7,563	\$7,563	\$220,848	\$220,848	\$977,299	\$977,299	\$977,299
Sr. Current Interest Coverage	173.14x	177.69x	6.24x	6.40x	1.48x	1.52x	1.56x
Jr. Debt Service	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Commercial Paper	39,500	39,500	39,500	39,500	39,500	39,500	39,500
Subordinated Debt Service	\$39,500	\$39,500	\$39,500	\$39,500	\$39,500	\$39,500	\$39,500
Jr. Current Interest Coverage	10.26x	10.53x	4.04x	4.15x	1.32x	1.35x	1.39x

A sources and uses of funds through completion of the system's construction in FYE16 is shown in the following chart:

**SOURCES AND USES OF FUNDS (THROUGH FYE16)
UNINFLATED**

<u>Sources of Funds</u>	
1/4 Cent Statewide Sales Tax Revenue	\$18,563,506,525
Sales Tax Bond Net Proceeds	3,739,200,000
Commercial Paper Net Proceeds	999,000,000
Other Funding Sources	727,705,162
Interest Earnings on Cash Balances	<u>2,576,770,240</u>
<i>Total Sources of Funds</i>	\$26,606,181,926
<u>Uses of Funds</u>	
Capital Costs	\$24,974,000,000
Sales Tax Bond P&I Payments	1,631,621,336
Ending Cash Balance	<u>560,590</u>
<i>Total Uses of Funds</i>	\$26,606,181,926

Impact of Inflation

While the plan has been developed in FYE99 dollars, it is also important to inflate the project costs and revenues to examine the overall impact of inflation on the financial plan. The following chart details the sources and uses of funds for the project on an inflated basis.

**SOURCES AND USES OF FUNDS (THROUGH FYE16)
INFLATED**

<u>Sources of Funds</u>	
1/4 Cent Statewide Sales Tax Revenue	\$24,115,530,291
Sales Tax Bond Net Proceeds	7,995,500,000
Commercial Paper Net Proceeds	999,000,000
Other Funding Sources	1,020,406,337
Interest Earnings on Cash Balances	<u>3,073,751,606</u>
<i>Total Sources of Funds</i>	\$37,204,188,234
<u>Uses of Funds</u>	
Capital Costs	\$34,178,531,865
Sales Tax Bond P&I Payments	3,024,657,240
Ending Cash Balance	<u>999,129</u>
<i>Total Uses of Funds</i>	\$37,204,188,234

It should be noted that based on an annual inflation factor of 2.50%, the term of the sales tax must be extended from twenty years to twenty two years, resulting in a termination date of March 31, 2023.

Options for Early Removal of the Tax

The Authority has asked its consultants to focus on methods of minimizing the impact of the temporary tax on California residents. One option to do this is to utilize the project revenues following completion of the system to refund sales tax debt and thus reduce the effective term of the tax from twenty years.

Because of the sixteen-year construction schedule, using the projected project revenues to secure debt during construction would be both expensive and inefficient. However, once the project has opened, requirements for capitalized interest and construction risk will be substantially removed. This would allow for the securitization of revenues to refund sales tax bonds.

Were the Authority to follow this approach, project revenue bonds in the amount of \$1.8 billion in FYE 2017 and \$1.1 billion in 2018 could be issued in the uninflated scenario. These bonds (along with the coverage portion of the sales tax revenue) would be used to refund and defease a portion of the \$5.2 billion in sales tax debt.

Under both the uninflated and inflated scenarios, the sales tax could be removed in FYE18. In the uninflated scenario, this would result in a savings to the taxpayers of approximately \$5 billion from FYE19 to FYE21. On an inflated basis, the savings would be approximately \$15 billion from FYE19 to FYE23.

It should be noted that in the event project revenue debt is utilized, the surplus revenue available to the state would be reduced substantially by the amount of the debt service payments. Rather than generating \$3.3 billion over the first ten years of operation (1999 dollars), the net available revenues would decline to \$1.1 billion.

Funding Authorization In 2006 Scenario

Should the Authority and the legislature so choose, we have developed an alternative financial plan in which initial costs for environmental review and preliminary engineering are funded from existing sources. Under this alternative, the vote on a tax source for the project is deferred until June 2006, becoming effective on September 1, 2006.

Unlike the 2000 funding scenario, deferring a ¼ cent tax vote until 2006 does not allow for the early accumulation of cash surpluses, and thus substantially reduces the contribution of interest earnings to the project. In addition, unlike the 2000 funding scenario, a ¼ cent tax funded in 2006 has substantial project costs that require debt financing in the early years. Since the debt is outstanding for a longer period, interest costs are significantly higher than the 2000 funding scenario.

In order to amortize the amount of debt required with a ¼ cent sales tax funded in 2006, an initial term of forty years would be required, rather than twenty for the 2000 funding alternative. Given the cash flow requirements, a larger sales tax of ½ cent, for a shorter ten year term, would be a more cost effective funding scenario for the state.

Should a ½ cent tax funded in 2006 be authorized for a ten year term, the project would be financed primarily on a pay-as-you-go basis. In the uninflated scenario, the financial plan would require issuance of \$530 million in TECP. In the inflated scenario, the financial plan would require issuance of \$1.1 billion in TECP.

Providing for Initial Funding

The 2006 funding alternative requires the identification of \$370 million prior to the implementation of the tax source. This funding is required to cover project costs associated with environmental review and preliminary engineering costs from FYE01 through FYE06.

Currently, there is no categorical program for the funding of this requirement. However, compared to the overall cost of system construction, this amount may potentially be funded from existing state and federal transportation funding sources. The following is a discussion of some of those sources:

State General Obligation Bonds

The legislature may place a general obligation bond issue on any ballot and include funding for a designated amount of preliminary engineering on the HSR. If approved by the voters, bond proceeds will be raised by the state treasurer and allocated during times of project readiness. Given the six-year requirement for preliminary engineering, if bonds were to be authorized it is likely they will be raised over multiple state bond issues.

While GO bonds will have the least impact on the state budget or other funding priorities, using thirty year bonds to fund studies and engineering prior to determining the ability to actually fund

construction will raise questions of propriety since the debt cost will far outlive the environmental reports should the project not be funded.

State Transportation Improvement Program (STIP)

The STIP is the primary document for state funding of transportation in California. While much of the funds flowing through the STIP are dedicated to highways, the STIP can be a significant source of rail funding.

The STIPs ability to fund rail projects however has been limited by the failure of the voters to approve two \$1 billion bond issues in 1992 and 1994 respectively. This created a \$2 billion deficit in the state rail program.

To the extent the legislature and the CTC seek to advance high-speed rail development, the STIP should be considered the primary source of state funding.

Federal Funding

While there are no categorical Federal programs sufficient to construct the high-speed rail system, there are funding sources that could be applied to the environmental and preliminary engineering phase of the project. It is expected that a congressional earmark would be required to achieve funding, and a significant state match would be necessary.

Although several bills have been recently introduced, the “FY 2000 Department of Transportation and Agencies Appropriations Act” may have an impact on the potential funding options for the HSR system. The full House has approved a recommended \$22 million program for Next Generation High-Speed Rail. The Senate Appropriation Committee’s request for \$20 million for Next Generation High Speed Rail, all technology and no development, has passed in the full Senate but has yet to attain the mark-up of the Conference Committee. If the bill moves smoothly through the Senate Conference Committee it could be offered as a stand-alone bill by the end of the year, or as part of a larger bill encompassing other un-enacted spending bills.

The \$216 billion TEA 21 bill designated \$2 billion for all rail funding. Although the funding for rail programs was not in all cases guaranteed, TEA 21 was a significant piece of legislation for rail in that it recognized the increasing importance of high speed ground transportation in the nation’s transportation future. TEA-21 will be reauthorized in 2003, and will provide the opportunity to institute a Federal-funding program for high-speed rail development

APPENDIX A

APPENDIX B

APPENDIX C

Demonstration of Public Value Capture Impacts for Communities within the High Speed Rail Corridor

The California High-Speed Rail Program will create a new regional system of transportation within the state and provide for rapid movement of passengers and freight within a 680-mile corridor linking cities and communities along the existing SR-99. Within this transportation corridor, numerous rail stations will be constructed to accommodate system passengers embarking or disembarking at various communities along the line.

This system and the development of one or more station properties will afford local communities with a unique opportunity to leverage rail investment for the creation of dedicated local public revenue sources. Until recently, most transit agencies, as well as local planning and development authorities were slow to aggressively promote transit-oriented development, believing that it would occur naturally or was outside their core activities. But recognizing that growth did not necessarily gravitate to rail stations (but instead to freeway interchanges), a number of transit agencies as well as city governments have implemented pro-active measures designed to invite private sector participation and to make it succeed.

This opportunity can be utilized by urban, suburban and rural communities situated at or near future station sites. This paper discusses the available mechanisms of public value capture, and more specifically, joint development as a means of creating economic value from the nexus of transportation and land use. A demonstration of the economics behind joint development is presented to illustrate its potential in a variety of situations.

Introduction

Major transportation infrastructure improvements can enhance the value and development potential of adjoining land whether publicly or privately owned. In the past, these public investments have increased land values of private property owners with no recapture to the public provided. Value capture represents the concept of more direct public control over the development of land and the apportionment of benefits around major public facilities.

Through the use of selected value capture techniques, the financial and related design benefits can be increased in the interest of the general public. In short, transit systems generate opportunities to provide goods and services to riders and nearby residents and create financial benefits for underutilized real estate assets in station areas.

As part of the station area planning process for the high speed rail system, local communities should consider the potential for real estate development impact to surrounding areas as well as specific sites located at or near planned station locations. Although public value capture strategies ultimately provide real impacts at a state and regional level through increased tax revenues, the vehicle for their implementation, as well as the recipient of the greatest benefits, is the local city or county government.

A strategic approach to planning for the increased values associated with rail station development and use will give local communities the ability to capture positive benefits

associated with new markets for retail, office and housing developed within the context of a transit-oriented projects.

The Concept of Public Value Capture

Why should local elected officials, land use agencies and developers pay more attention to development near transit station sites? There are many reasons why transit-oriented development (TOD) or station-oriented development (SOD) make sense from the point of view of the transit agency involved with running the rail system; however, local communities will also benefit from rail/station connection. Notably:

- Transit-oriented development increases property values. Building near a transit stop is not only good for the transit system, it is good for property owners and interested developers. Residential and commercial projects near transit typically appreciate in value more rapidly than other projects. As demand for scarce properties near transit stops increases, this trend will continue.
- Development near transit stops increases tax revenues. As the value of property near transit appreciates, property taxes collected by local governments also increase. In fact, some cities take advantage of this by using tax increment financing to help fund area capital improvements.
- Transit-oriented development provides retail opportunities and increases sales tax revenues. Pedestrian activity around transit stops supports retail activity. Not only does this improve the viability of small businesses, but it also translates into increased sales tax revenues for local governments.
- Transit-oriented development provides local special purpose development organizations (redevelopment agencies, economic development groups, etc.) with an opportunity to directly participate in the ongoing price appreciation of properties affected by station development. Joint development, special connection fees, cost sharing agreements and other mechanisms available to local governments can provide direct non-tax revenues to local governments.
- Transit-oriented development can help revitalize downtown and neighborhood areas. By attracting new development, transit can be a catalyst for revitalizing deteriorating and economically blighted areas. Transit-oriented development by itself is unlikely to cause the turnaround of an area bypassed by the local market, but used in concert with other economic development tools, transit-oriented development can provide a catalytic effect promoting new life in previously bypassed sections of the community.

Transit-Oriented Development - Revenue Generation Techniques

There are two primary ways that transit-oriented development can generate revenue for a local government: direct development revenue and more indirect value capture techniques. Each of these methods requires different levels of involvement, risk and reward. Local governments should determine, on a project-by-project basis, which of these methods (or combination of methods) should be incorporated into the specific strategic plan.

1. Direct Development Revenue - this is revenue generated directly from either publicly-owned real estate assets or development activity. This can include:
 - Sale or Lease of Ground/Air Rights - typically a long-term lease of publicly-owned property to a developer which generates revenue over time. Property can be sold outright, although most public development agencies prefer the leasing arrangement, in order to maintain control over development of the property and to retain fee title upon expiration of the lease.
 - Connection Fee - a negotiated fee charged to a property owner in exchange for a physical connection between his property and the transit station. Such fees are possible when a private owner views the connection to a transit station as economically beneficial to his property.
 - Co-development - the development of commercial properties at transit sites in which the public development agency would contribute property, planning assistance or funding to a project. In return for its assistance, the agency would receive a percentage of the project's return.
 - Station Cost Sharing - the construction (or financing) of transit facilities by a private developer. This may be applicable in situations where the developer sees some direct benefit from the improvements (e.g., portal connections, pedestrian walkways, parking facilities, etc.)
 - Advertising and Incidental Lease Revenues - billboard advertising charges and rental payments from retail vendors in transit stops.
2. Value Capture Techniques - These are mechanisms used to indirectly capture some of the economic benefits derived by the private sector from the development and operation of the transit system. Value capture techniques include:
 - Benefits Assessment Districts - assessment charges imposed on property owners in a designated area, based on the specific benefits to those properties, as generated by the transit facilities.
 - Tax Increment Financing - incremental property tax receipts (above a pre-determined base) which can be attributed to infrastructure improvements, such as transit facilities. These incremental receipts will typically be captured through a redevelopment agency (which could dedicate some of its own tax increment funds for transit facilities in a designated redevelopment area), or through the establishment of infrastructure financing districts.
 - Development Exactions - additional requirements placed on the developer during the discretionary approval process to assist in funding improvements.

- Density Bonuses - permitted increases in density at transit sites in order to create additional value on those properties. The development agency could then capture some of this incremental value by negotiating for additional financial support by the property owner or by placing other requirements on the developer of the site.
- Development Impact Fees - established fees places on new development which has been shown to have a direct relationship (nexus) to the impact of that development on local infrastructure, including the transportation system.

The Joint Development Process - Critical Success Factors

In order to illustrate how a local community can benefit from value capture opportunities associated with the development of rail station sites, the example of joint development is discussed. Joint development is a vehicle through which development rights at or near transit stations are leveraged in order to generate financial and community benefits, as a result of improvements placed on such properties.

First, what are the critical factors which must be in place in order to implement a successful joint development program?

- Local Area Funding - this is typically accomplished by use of a city's redevelopment powers granted under the California Community Redevelopment Act. Redevelopment agencies can issue tax-exempt bonds which can be an important incentive in structure joint development projects. Redevelopment agencies also have broad eminent domain powers, in redevelopment areas, which can be useful in assembling development sites.
- Coordination of Zoning and Land Use Planning - where appropriate, areas surrounding potential station sites should be rezoned in order to maximize development opportunities. For example, the following zoning changes would improve joint development opportunities:
 - ⇒ Reduction of parking requirements for developments at or adjacent to transit stations. This would greatly reduce the cost of development and provide greater impetus for transit use.
 - ⇒ Flexible, mixed-use zoning (e.g., residential, commercial and recreational uses) at transit stations. Zoning should also be flexible enough to allow developers to take advantage of unique conditions at each site.
 - ⇒ Density bonuses, or other planning incentives. Density bonuses can be used to focus development at and around transit sites. Density bonuses can also be a funding source for transit related improvements or offered in exchange for pedestrian walkways, station entrance ways, platforms, or other design features.
- Coordination of Station Site Planning and Joint Development Opportunities - Stations are located within a community according to route alignments, the ability of the transit agency to acquire land, engineering and other factors. Coordination of station siting decisions with local concerns for joint development and economic revitalization opportunities should be part

of the overall planning process. To promote joint development and an efficient transit system, entrances to stations should be places upon sites with strong existing uses or redevelopment potential.

- **Institutional Powers and Arrangements** - joint development involves the actions of multiple parties from both the public and private sectors. One or several agencies may control public participation. The important role played by the public sector is that of coordinator of the real estate development efforts. To function successfully, the public sector should possess the necessary legal authority and the appropriate professional resources to cope with joint development issues and challenges. Ideally, the public sector, through a single agency or combination of agencies, would have the powers to condemn, buy, sell, and lease real property; alter zoning and land use designations; enter into agreements with private parties and other public agencies; and provide financing and development incentives where needed.
- **Market Conditions** - market conditions are central to any deal-making effort between public and private parties. The interest of a developer to a joint development opportunity will be directly related to the strength of the local market. Also, the public sector role varies from requiring concessions from developers in strong markets to providing incentives in weak or uncertain markets. In general, the greater the cost and the more risk to a private developer, the greater the return and the longer the public sector contribution that will be required to lure developers into the marketplace. However, the government entity contributing significant land or capital to a risky venture can, through the structure of the transaction, ensure that it will realize upside potential on its investment. This can be accomplished through increasing lease fees over time, obtaining equity or percentage interests, or similar arrangements.
- **Creative approaches to Private Sector Risk Reduction** - joint development is rarely successful without the use of pro-active measures by transit agencies and/or local governments. Local governments can seek to reduce financial and market risk with a variety of techniques:
 - ⇒ Use of redevelopment powers for land assemblage
 - ⇒ Infrastructure investment (directly or through use of tax increment financing)
 - ⇒ Parking development and utilization of shared-use parking
 - ⇒ Underwriting of land costs
 - ⇒ Direct financing participation (issuance of tax-exempt bonds, low interest loans, loan guarantees, grants, equity participation)
 - ⇒ Expediting the entitlement approval process
 - ⇒ Provision of station area benefits by the public entity in exchange for land or other private sector contributions
 - ⇒ Location of public facilities within transit-based development to spur economic activity
 - ⇒ Flexible development approaches (design-build/turnkey) and creation of public/private subsidiaries

Potential Pitfalls of Joint Development

In general, new development (private or public/private) will occur near rail stations only when other factors, such as a strong market demand, supportive land use policies and low cost available land at attractive prices, are in place. Where the economic vitality of a community or a neighborhood is already strong, and there is no community opposition to development, public agencies owning property can expect to receive development offers and to obtain market rates for their property.

Far more frequently, however, public agencies have amassed property adjacent to transit lines in underdeveloped or economically blighted areas. Development in these areas requires more effort. Many such developments are not economically feasible without large public sector contributions and thus become subject to availability of public funds and political intervention. Others run into the traditional obstacles of lack of financing, government inertia, and neighborhood opposition common to many mixed-use projects.

An additional dilemma of joint development projects is that the requirements for a successful rail line are, in some cases, at odds with what is needed for successful station-oriented development. In case of Los Angeles' MTA, political leaders sited rail lines through areas of disinvestment and abandonment, on top of previously existing lines. The siting reflects the political mentality of decision-makers, who aligned themselves with "railroad people" seeking only to create rail service in as cheap and rapid a manner as possible. In so doing, area political leaders ignored and contradicted the only plan in effect that was designed to direct growth in Los Angeles.

In contrast, real estate officials with San Francisco's Bay Area Rapid Transit (BART) system approach transit and community development in a more comprehensive fashion. While there is still a rail service mentality, it is not a rail-only kind of thinking. Improving levels of rail service remains primary, although new transit village projects along BART lines do so in a context that appreciates the individuality of neighborhoods where stops are located. The new transit villages consider not only ridership, accessibility, and station design, but also surrounding land use, neighborhood identity, safety, cleanliness, and economic development potential. New transit villages are seen as the "organizing principle" around which neighborhoods can develop social and economic networks.

While this idea of transit stops-as-subcenters was also held in Los Angeles, the assumption was that the mere existence of an accessible transit station would automatically and immediately attract private investment. No real attempt was made (despite the existence of an integrative city Land-Use Transportation Policy and enabling state legislation) to connect surrounding land uses with transit or the types of people who might want to go there. While vast sums of public money were apparently invested into making the transit stops accessible and aesthetically attractive, there was no link to the community around the stop.

Demonstration Model of Joint Development Impacts

The following section provides a demonstration of potential public sector economic impacts resulting from joint development/value capture programs under a variety of station area locations.

The analysis provides a demonstration of potential economic impact based on the concept of publicly-owned land adjacent to a rail station site, ground leased for commercial development. The exhibits illustrate potential impact from a joint development/value capture strategy employed at station locations in two generalized station locals -- urban areas and suburban areas.

In each case, the generalized area has been represented by a hypothetical station location. Three different joint development scenarios have been constructed for this illustration:

- Urban Area Number 1 - Union Station: This is envisioned to constitute a dense, built up downtown area within a major metropolitan city such as Los Angeles or San Francisco. The model for this scenario is the Union Station project area in downtown Los Angeles.

According to the “Candidate High Speed Rail Stations and Intermodal Connectivity” report¹, the Los Angeles Union Passenger Terminal (LAUS) is located on a 70 acre site +/- owned by Catellus Corporation in the northeastern section of downtown Los Angeles, also known as the “Alameda District”. LAUS is bordered on the north by Ceasar Chavez Boulevard, on the south by the Hollywood Freeway (U.S. 101), on the east by Vignes Street and on the west by Alameda Street. In 1995, the Metropolitan Transit Authority (MTA) inaugurated the Gateway Center project on the 70-acre site. This project includes a 25-story office building which now serves as the agency’s headquarters, and a transit plaza designed as a bus transfer/flow-through facility. Catellus is in the process of completing a headquarters building for the Metropolitan Water District (MWD) adjacent to Union Station. The MWD will occupy all of this 500,000 square foot structure. Both the MWD and the MTA share a common parking structure.

- Urban Area Number 2 - Urban Fresno: This is envisioned to constitute an older downtown area of a major Central California city. The model for this scenario is downtown Fresno.

Downtown Fresno is a urban hub station site located on the Southern Pacific in the vicinity of an existing SP depot. Fresno’s early development occurred around the current Southern Pacific Depot in downtown Fresno beginning in the mid-19th Century and has grown dramatically ever since². This site would support downtown revitalization efforts and allow for integration with potential future light rail/fixed guideway service, bus service, and with a potential relocated Amtrak station, should intercity rail service be relocated from the ATSF to the SP right-of-way.

¹ *Candidate High Speed Rail Stations and Intermodal Connectivity*, March 1996; Sharon Greene and Associates

² *Candidate High Speed Rail Stations and Intermodal Connectivity*, March 1996; Sharon Greene and Associates

- Suburban Area Number 1 - Suburban Fresno: This is envisioned to constitute a newer suburban area of a major metropolitan area or in a major Central California city. The model for scenario is suburban Fresno.

This site is a potential suburban hub alternative to downtown Fresno and is located at Cornelia Avenue, five miles west of downtown. This site could potentially reduce the impacts and costs associated with a downtown station location, and could provide additional land for development of station-related facilities and parking³. However, the suburban site is not located within the metropolitan area's high growth spine and consequently, the demand for new office, retail and high density residential uses will be less.

Generalized market data regarding commercial land values, lease rates and construction costs were gathered for each area. This information was used in turn to develop "prototype" financial analyses of transit-oriented joint development projects involving rail stations with commercial development. The resulting model demonstrates the potential for annual tax and non-tax related income from a hypothetical joint development project.

It should be stressed that the following analyses are only illustrative of the potential for joint development impact. No actual station sites have been assessed for development potential, nor have the costs of mitigating any physical or economic issues specific to individual property been included. Thus, apart from an assumption of land acquisition costs, the impacts resulting from the prototypes should be understood to represent "gross impacts". Actual annual net impacts will be affected by the relative strength of local markets and potential public "incentive-costs" such as tenant relocation expenses, assumption of off-site improvements, and development cost write-downs should they be required.

Prototype Development Program

The prototype programs assume the following scenario. During the land acquisition phase for station sites, sufficient land is purchased by a public development agency to create joint development projects at sites where there is a sufficient market for new development. Prior to commencing station design, the agency markets its property in the private sector for a mixed-use development program which takes advantage of the station-rail line location. Working in tandem with a developer, the agency retains ownership of its property and leases the right to commercial development (either by a ground-lease or air-rights arrangement). Under this assumption, the agency becomes a development partner and shares in the non-tax annual revenues that the commercial development will generate.

In the Fresno prototypes, a mixed-use development consisting of residential apartments, commercial office and ground-floor retail uses has been assessed. The Union Station prototype assumes a commercial office facility with office- and transit-serving retail. The three development programs are as follows:

³ *Candidate High Speed Rail Stations and Intermodal Connectivity*, March 1996; Sharon Greene and Associates

Location	Mix	Configuration
Union Station	80,000 SF retail 60,000 SF office	Vertically-stacked building. 4 level structure. 4 levels of parking above ground parking.
Urban Fresno	100 dwelling units 135,000 SF retail 135,000 SF office	Vertically-stacked building. 6 level structure. 3 levels of parking above ground parking
Suburban Fresno	100 dwelling units 135,000 SF retail 135,000 SF office	Low-density TOD with two-level walk-ups. Surface parking.

For each of the above prototype developments a static financial proforma model was created. The proforma estimates net operating income (NOI) for the project as well as development costs including financing. In each case, a land-residual analysis was performed which indicates the underlying land value of the each prototype project once developed. This information was used to estimate the potential annual income stream from ground lease payments by a private developer/operator.

The concept of land residual analysis bears some explanation. The Joint Development process outlined in this paper assumes that publicly-owned land will be leased on a long-term basis to a private developer who will build and operate a commercial building on that land. The public agency which actually owns the land, will receive a monthly rental payment from the developer, much as any landlord would for renting valuable property. For his part, the developer is able to reduce the amount of upfront capital investment (he doesn't have to buy the land outright) and is thus able to lower his cost of development.

The concept behind a land residual analysis is that, once developed to its highest and best market use, land becomes more valuable than it was previously. This process is behind the slow conversion of some older single family residential areas into higher density multifamily districts. If the public agency is able to purchase this land at the older (and lower) value, the incremental value associated with new development on top of that land is reflected in the new higher underlying land value. It is this incremental value which is represented in the value capture equation.

In brief, new land value for each of the project areas is derived in the following manner:

Project Market Value	(Stabilized NOI / Capitalization Rate)
(LESS)	
<u>Project Development Value</u>	<u>(Construction Value + Financing Costs + Developer Profit)</u>
= LAND RESIDUAL	(\$ remaining after subtracting Development Value from Market Value)

Land values in excess of the initial acquisition cost of the land indicate a positive value capture situation. Land values lower than the initial acquisition cost of the land indicate that the public

agency will need to effectively subsidize development in order to attract a developer to the site effectively negating all or part of the site's value capture potential⁴.

Details regarding all assumptions employed in the financial analysis as well as the proformas developed for each prototype are contained in the Appendix to this memorandum.

Potential Value Capture Impacts From Joint Development

Exhibit 1 provides a summary chart of the potential impacts from the three prototypes. In these examples, value capture opportunities consist of both direct and indirect impacts. In this case, direct impacts consist of annual lease payments from ground and station rents. Indirect impacts shown consist of incremental property tax and sales tax proceeds generated from the new economic activity brought about from the joint development project.

In all three examples, an assumed land acquisition cost is subtracted from the gross impacts. It should be noted that the resulting net impact will in all likelihood be reduced further after site specific costs for public subsidies, relocation and demolition costs are incorporated. Exhibit 1 is summarized below.

Net Annual City Impacts by Prototype

Annual Impact	Union Station	Urban Fresno	Suburban Fresno
Direct Revenues			
• Ground Rent Income	\$ 269,373	\$ 407,799	\$ 1,601,763
• Other Income	\$ 180,000	\$ 0	\$ 0
Indirect Revenues			
• Sales Tax	\$ 160,000	\$ 236,250	\$ 222,750
• Property Tax	\$ 257,354	\$ 497,816	\$ 560,388
LESS Land Acquisition Cost ⁽¹⁾	\$ 140,173	\$ 114,058	\$ 556,033
Net Annual City Impacts	\$ 726,553	\$1,027,807	\$1,828,868

⁽¹⁾ Based on annual bond payment.

Discussion of Net Benefit Results

The following discusses each station prototype performance in order from lowest to highest value potential.

Union Station - this analysis results in the lowest annual net benefit relative to the two Fresno Stations for the following reasons:

⁴ Note, there may be methods that can be used to "subsidize" development that do not represent outright financial contributions by the Agency. These can include assistance with land assemblage; forgiveness of, or expediting of development fees and exactions; use of public financing instruments, such as tax-exempt bonds, and loan guarantees; provision of station area benefits for private sector contribution; etc.

- **Different Land Use Mix** - Union Station is assumed to have no residential component and less commercial development (i.e., 140,000 versus 170,000 square feet). This assumption was based on current surrounding land uses as well as recent poor performance for ground floor retail operations in the MTA building. The project incurs greater parking costs relative to the Fresno examples due to the higher parking ratios applied towards retail and office uses relative to residential uses.
- **Low Assessment Coverage Area** - Based upon the land development program applied and assumed vertical development, the Union Station site requires less land (i.e., 67,500 versus 453,125 and 151,042 for the Fresno Suburban and Urban Stations). As a result, estimated ground lease and property tax proceeds are less since such values are based on the total land area assessed.
- **High Initial Land Acquisition Price** - \$22 per square foot relative to \$8 per square foot (Fresno Urban) and \$13 per square foot (Fresno Suburban).

Fresno Urban - this analysis results in a higher annual net benefit relative to Union Station but lower annual net benefit relative to Fresno Suburban for the following reasons:

- **Fresno Urban versus Union Station** - Fresno Urban has higher rent rates and lower land acquisition and development costs. There is also increased development for the Fresno Urban site (i.e., 370,000 versus 140,000 square feet).
- **Fresno Urban versus Fresno Suburban** - Fresno Urban has a lower capture of ground lease and property tax proceeds because of the smaller assessed land area.

Fresno Suburban - this analysis results in the highest annual net benefit relative to Union Station and Fresno Urban Station for the following reasons:

- Greater assessment coverage for increased ground lease and property tax proceeds.

FINANCIAL ASSUMPTIONS AND SOURCES EMPLOYED IN PROTOTYPE PROFORMA ANALYSIS

I. Baseline Assumptions

Land Acquisition - Based on published land values from sources including: ULI's Market Guide, CB Richard Ellis, Landauer Real Estate and annual Grubb & Ellis reports. Data confirmed by interviews with local brokers. In the case of Union Station, the land purchase price of \$24 per square foot for a site located on the site of the Belmont Learning Complex was considered.

II. Development Program

Land Use Mix - With the exception of Union Station, the land use mix (i.e., 27% residential, 36% retail and 36% office) was based on the typical size and mix of publicized TOD projects.

Occupied Area - Occupied area is the total area of which rental income is generated.

Development Levels / Project Land Area - The total land area required for development is based on the total occupied area divided by the number of development levels. In both the Union and Fresno Urban Stations, four and six levels respectively, are assumed to reflect the lack of land available for development and increased land prices. Two levels are assumed for the Fresno Suburban Station since land is more readily available and cheaper.

Parking Requirements - Based on a ratio of 1.5 spaces per unit for residential uses and one space per 400 SF for retail and office uses.

Parking Area: - Based on ratio of 300 SF per space required.

Parking Levels - Parking land area based on total parking area divided by the number of development levels. In both the Union and Fresno Urban Stations, three levels are assumed to reflect the lack of land available for development and increased land prices. One level is assumed for the Fresno Suburban Station since land is more readily available and cheaper.

Total Land Area - Based on land area for both the development uses and parking area.

III. Financial Analysis

Rent Rates - Rent rates reflect triple net terms. They are based on published rates from sources including: ULI's Market Guide, CB Richard Ellis, Landauer Real Estate and annual Grubb & Ellis reports and are adjusted accordingly to reflect data gathered from interviews with local area brokers and users. In the case of Union Station, interviews noted no true comparable properties for office and retail uses since it is located on the downtown fringe versus core. The Union Station land, as well as its surrounding areas, are owned by a single developer (Catellus Development Corporation). Only two non speculative office buildings have been developed by Catellus. Therefore, downtown averages were used for Union Station and adjusted downward by 20% to reflect rent rates on the fringe.

Effective Gross Revenue - Includes both rental and other incomes (i.e., parking, etc.) less a vacancy / collection loss factor of 10%.

Operating Expenses - Includes CAM, property taxes (1.03% of estimated land value), insurance, unrecoverable expenses, management fees, reserves / on going TI's, and leasing commissions. Operating expenses for the Union and Fresno Urban Stations are higher than the Fresno Suburban Station to reflect the higher cost of doing business in downtown locations. Assumptions based on estimated averages for comparable projects.

Building Costs - Based on total development budget (i.e., direct and indirect costs) less parking costs and developer profits. Assumptions based on estimated average for comparable projects and confirmed through Marshall & Swift Building Cost Guide.

Parking Costs - Based on Marshall & Swift Building Cost Guide and ULI's Guide to Parking. The overall parking costs for Union Station and Fresno Urban Station are higher than the Fresno Suburban Station to reflect development of a multi story on-site parking structure compared to a one level surface parking lot.

Residual Land Values - Based on total of the station's Net Operating Income (NOI) and residual value less the land, construction and financing costs.

IV. Value Recapture Opportunities

Direct Impacts - Assumes public ownership of land by local municipality.

Annual Ground Lease Proceeds - Calculated as 9% of total land value (9% * residual land value * total development).

Annual Station Retail Lease Proceeds - Applicable to Union Station Only. Based on assumption that 5,000 SF of vendor and kiosks space within the station will be leased out to retailers at \$3.00 per square foot. This income stream is included to offset the lower level of retail that is proposed for the site.

Indirect Impacts

Annual Property Tax Proceeds - Calculated at 1% of incremental assessed value (residual value less total land acquisition cost) based on estimated City average.

Annual Retail Sales Tax Proceeds - Calculated as a percentage of total sales revenue generated. Total sales revenue based on retail square footage multiplied by estimated sales per square foot figures of \$200, \$165 and \$175 for Union Station, Fresno Suburban Station and Fresno Urban Station, respectively. Sales tax allocation includes 1% to the City, 1.25% to the County and 6% to the State based on the Kosmont Cost of Doing Business Survey.

V. Required Costs

Required Subsidies - Can not be estimated due to the preliminary stage of project assessment. Subsidy amounts to be determined upon further site analysis and negotiations among affected parties.

Acquisition Costs - Total acquisition costs based on estimates on current land prices from published sources including: ULI's Market Guide, CB Richard Ellis, Landauer Real Estate and annual Grubb & Ellis reports. Data confirmed and adjusted accordingly through interviews with local brokers and area users.

For purposes of estimating the annual net profit (loss) to the City, a municipal bond was assumed for financing of the land. Annual payments are based on terms of 20 years at 7%.

Demolition / Relocation Costs - Cannot be estimated due to the preliminary stage of project assessment. Such costs to be determined upon further site analysis and negotiations among affected parties.

NET ANNUAL PUBLIC VALUE CAPTURE IMPACTS BY PROTOTYPE
(For the City, County and State)

	STATION PROTOTYPES					
	LOS ANGELES - UNION STATION		FRESNO - SUBURBAN STATION		FRESNO - URBAN STATION	
DIRECT IMPACTS						
VALUE OF GROUND LEASE PROCEEDS						
Proceeds as % of Residual Land Value	\$ 269,373	9%	\$ 1,601,763	9%	\$ 407,799	9%
Total Annual Ground Lease Proceeds	\$ 269,373	\$ 44 PSF	\$ 1,601,763	\$ 39 PSF	\$ 407,799	\$ 30 PSF
ANNUAL RETAIL LEASE PROCEEDS						
Proceeds from station retail lease proceeds	\$ 180,000	5,000 SF	\$ -	- SF	\$ -	- SF
Total Annual Retail Lease Proceeds	\$ 180,000	\$ 3.00 PSF (NET)	\$ -	\$ - PSF (NET)	\$ -	\$ - PSF (NET)
INDIRECT IMPACTS						
VALUE OF PROPERTY TAXES						
Incremental Assessed Value	\$ 25,735,388		\$ 56,038,827		\$ 49,781,646	
Proceeds as % of Residual Land Value	257,354	1.00%	560,388	1.00%	497,816	1.00%
Total Annual Property Tax Proceeds	\$ 257,354	\$ 44 PSF	\$ 560,388	\$ 39 PSF	\$ 497,816	\$ 30 PSF
VALUE OF RETAIL SALES TAX						
		PSF Sales		PSF Sales		PSF Sales
City Allocation	\$ 160,000	1.00% \$ 200	\$ 222,750	1.00% \$ 165	\$ 236,250	1.00% \$ 175
County Jurisdiction	200,000	1.25%	278,438	1.25%	295,313	1.25%
State	960,000	6.00%	1,336,500	6.00%	1,417,500	6.00%
Total Annual Tax Proceeds	\$ 1,320,000		\$ 1,837,688		\$ 1,949,063	
(LESS) REQUIRED SUBSIDIES						
Residential	-	To be determined	-	To be determined	-	To be determined
Office	-		-		-	
Retail	-		-		-	
Total Required Subsidies	\$ -		\$ -		\$ -	
(LESS) ACQUISITION COSTS						
Land Acquisition Price		\$ 22.00 PSF		\$ 13.00 PSF		\$ 8.00 PSF
Bond Amount		1,485,000		5,890,625		1,208,333
Bond Payments	(\$140,173)	20 Years	(\$556,033)	20 Years	(\$114,058)	20 Years
Demolition / Relocation Cost	-	7%	-	7%	-	7%
Total Acquisition Costs	\$ (140,173)		\$ (556,033)		\$ (114,058)	
Net Annual Public Value Capture Impacts ⁽¹⁾						
	\$ 1,886,553		\$ 3,443,805		\$ 2,740,620	

(1) Before consideration of required subsidies and acquisition cost. Includes City, County and State proceeds.

APPENDIX D

CALIFORNIA HIGH SPEED RAIL FREIGHT STUDY

Supplemental Information

The following is a summary of statistics, forecasts, and opinions relevant to the target market for freight service for the High Speed Rail Project. The target market consists of time-sensitive (overnight) delivery of small parcels and packages. The information is organized into the following sections:

1. Industry Structure and Market Size
2. Industry Costs
3. California and Local Market
4. Current Industry Trends
 - General
 - E-commerce
5. Future Outlook

Each bulleted piece of information is followed by a number which provides a cross-reference to the list of sources in the attached bibliography.

Industry Structure and Market Size

- Total market size of US domestic air freight market was \$26.6b in 1998, with 88% of the revenue registered by the integrated express operators. (36)
- The relative shares of air express market have remained relatively stable over past 4 years even though market has grown significantly. Market shares are: FedEx at 46%; UPS at 28.8%; Airborne Express at 19.5%; and US Postal Service at 4 percent. (36)
- There are 7 firms in market: 5 of them, FedEx, UPS, Airborne, DHL, and the USPS (Express Mail), focus on small packages and documents; the other two Emery and BAX Global compete in the heavyweight freight market. Package/document firms average 10 lbs/shipment; heavyweights average 250 lbs/shipment. Top 3 have 95% market share in shipments; 84% shares in weight. Same day service (moved via commercial airlines is very small – estimated at much less than 0.1 percent of total air cargo RTMs (36)
- Overnight and 2-Day, 5 million parcels/day; UPS 30%; FedEx 44%; Airborne Express 20%, USPS express mail 5% (31)
- Time-definite service was 4 percent of U.S. parcel delivery market in 1977; over 60% today. Time-definite service was just under 10b revenue ton miles in 1989 to over 14b rtm in 1997 (4.3% annual), while charter, scheduled mail, and scheduled freight have remained relatively flat. (35)
- There are 3 main components to a successful air freight delivery system: 1) a pick-up and delivery component, 2) an air linehaul system, and 3) an information system to support booking, tracking, tracing and billing of shipments. (36)
- In 1998, UPS shipped 3 billion packages and documents worldwide with revenue of \$24.8b and net income of \$1.7b. They have 149,000 delivery vehicles and 500 airplanes. System carries 6% of US gross domestic product. (35)

- In 1997, US Postal Service delivered 100 billion pieces of 1st class mail; 77 billion pieces of standard mail, 1 billion pieces of priority mail, and 13 billion of other types. Priority mail is 2-3 day service that competes with next day products from UPS, fedex etc. Grew by 14% 1996-97. Priority mail is <1% by volume, but 6% by revenue and is growing at 14% by volume and 16% by revenue. Forecast is for continued strong growth in 1999 and 2000. (33)
- USPS Transportation. Rail: Contracts with most major RRs and Amtrak passenger trains using TOFC, COFC, and roadtrailer between specific O/D pairs based on per-unit basis. In FY '97 rail carriers transported 150,000 trailers between various O/D pairs in U.S. AMTRAK contract allows cheaper service than trailer load mail movements. Contract also includes terminal sorting operations. Postal service spent \$275m in 1998 for rail transport, a 36% increase over 1997. AMTRAK was paid \$72.6m for rail transportation services. For highway: 15,000 contract routes for sizes ranging from long-haul tractor-trailers to box delivery routes using contractor's cars. Spent \$1.8b on highway mail transport, a 5.9 % increase over 1997. Postal service's fleet costs \$809m in 1998. (33)
- Fed ex merged with Caliber Systems to form FDX. 1999 revenue = 9,869. In 1998 Fed ex's domestic revenue was \$9.326b, up from \$8.073b in 1997 and \$7.284b in 1996. In May 1998, 70% of FedEx revenue is from domestic operations; priority overnight is 45% of its domestic business. (14)
- One ongoing trend is market share (RTM) gains by integrated express carriers (e.g., FedEx, UPS) at the expense of the combination passenger/cargo airlines. In 1998, express market share reached 62%; scheduled freight declined to 19.6%; and mail (15.0%) and charter (3.4%) registered slight increases. This trend is likely to continue – recent efforts by the major carriers to slow this trend, may help stabilize, but not reverse, market share losses. A main reason for declining market share of the cargo/passenger airlines is that the major passenger airlines withdrew from freighter operations in the 1980s; their cargo is carried in combination passenger/cargo airplanes, and the airlines have decreased the relative share of widebody jets in their fleets for narrowbody units without containerized/palletized cargo capacity. (36)
- Courier Services, except by air (SIC 4215); 1997 Revenues = \$23,747m; 1997 operating expenses = \$23,118m. (32)
- 1999 estimated domestic revenues of \$3 billion (1st half total revenues of \$1.55 billion and 78,524 of 80,621 thousand shipments were domestic. (23)
- Operating revenue of \$23,474m is \$23,102m from motor carriers. Of the \$23,102m, \$4,443m is local trucking and \$18,659m is long-distance. (32)
- FedEx has built up its network of trucks and built freight sorting facilities across the country to support its new heavy freight initiative. Company officials believe heavy freight is a significant growth opportunity. They believe their integrated air/ground network will allow them to compete effectively for heavy freight in both short haul and long-haul (>500 mi.) markets. (36)

- FedEx uses its in-house fleets for about half its segments that are less than 225 miles so that drivers can return home each day – they use 8 long haul truck lines for the other half. (36)
- FedEx is slowly transitioning from being a transportation company to an information company which implies outsourcing major segments of its surface and air transportation network. (36)
- UPS' revenues of \$24.8b in 1998 are 48% greater than FDX, with \$16.8b for FY ending May 1999 including air and surface delivery. Domestic air and surface delivery was 87% of UPS revenues; air revenues were \$8.2b and surface \$16.6b; domestic air was 75% of \$8.2b or \$6.2b. (36)
- Effective May 1998, UPS began offering day-definite service of all its business-to-business shipments moved through its ground system. Thus, for distances that can be covered by truck in one night (roughly 500 mi.), UPS ground delivery offers the same overnight delivery service provided by air networks at as little as ¼ the price. (36)
- Third party logistics (order fulfillment, freight bill auditing and payment, cross-docking, product marking, labeling and packaging, inventory and warehouse management, parts return and repair, and physical goods movement) market is \$18-\$20b in 1998 or 4% of \$450b total contractable logistics market. Third party portion expected to grow significantly (15-20%/yr) in next several years (35)
- UPS' Package limits are 150lbs and 108"x130" in combined length and girth. They offer discounted rates for multiple shipments of 200lb or more or air shipments of 100 lbs or more. (35)
- In June 1999, Airborne Express announced an agreement with USPS to provide a deferred delivery service called [Airborne@home](#) for select customers that ship large volumes of small packages to residential customers. FedEx is rolling out a trial program. Business to residential is a major growth area. (36)
- Alaska Airlines operates 8 737-200 combi/quick change aircraft that serve the Alaska freight market. Several of these aircraft are sometimes operated at night without passenger service, and 3 of the 737s operate 5 nights/week from SEA to Juneau and ANC in all-cargo configuration (36)

Industry Costs

- For distances that can be covered overnight by delivery vehicle, UPS's ground delivery is ¼ the price of premium overnight air services. (35)
- Postal service has a western dedicated air network (WNET) that transports more than 150,000 pounds per day: 20% express; 65% priority; 15% first class mail. Air transport costs were \$1.3 b (includes commercial airlines, dedicated network, and air taxi). (33)
- During FY97, USPS spent \$830 million on domestic air service contracts with certified commercial air carriers. Total USPS transportation contracts are >\$3.2b per year (85 airlines, 12 railroads, 17 steamship companies, and >15,000 highway, box delivery, and air taxi routes). (33)

- Air contracts = 7m pounds/day and 24,000 O/D pairs. Contracts are for system (using contractor's entire schedule); segment (specific O/D pair); network (O/D matrix on rate-per-trip basis); air taxis (remote areas). Advantage of air contracts is allowing consistent flow rather than the large spike that would occur if all mail on one airplane. The avg. rate of Air System Contracts is \$32/lb. Air freight carriers used when schedules require better service than commercial carriers – this is provided at AC of \$.67/lb. (33)

California and Local Market

- 1993 total shipments originating in California: \$638.5b and 706.5m tons; Parcels (US Postal or courier) are 14.2% of value and 0.4% by weight or \$90.7b and 2.8m tons (18)
- In 1993, 800m tons and \$640m of freight into, out of, and within state. 50% of goods moved in California stayed in state which implies intra-California freight market is \$320m/yr. (2)
- 1992-2010 volume of goods expected to increase by 46%, population by 40%. 1192 pop = 31.3m; 2012 forecast is 43.6m (2)
- 1999 population = 33,773,000. 2020 = 45,448,627. (1.42%) 2030 = 51,868,655. 2040 = 58,731,006. (23)
- In California, trucking range of operation: 72% local; 16% short range (51-200 mi.); 5.4% long range (200 mi.+); 5% off-road. (1)
- UPS California hub is in Ontario (36)
- USPS – 1st Class mail usually moves by sacks or letter trays via commercial air flights; priority mail (PM) traditionally moved by air along with 1st class, however, it's outsourced much of the handling of PM in an attempt to turn Priority Mail into a time-definite, guaranteed two-day service. Express mail, time-definite overnight delivery moves using dedicated hub-and-spoke network operated under contracts by Emery Worldwide in Indianapolis, and by Evergreen International's Eagle subsidiary through a 14-city with west coast hub in Oakland. Hub planned to move to Reno in August 1999. (36)
- In late 1999, USPS hopes to introduce same-day product between certain high-volume city pairs including LA-SFO. (36)

Current Industry Trends

General

- JIT and supply-chain management are leading to smaller but more frequent shipments, more frequently delivered directly to end users. (35)
- International market is growing at 3 times the rate of the US market. (35)
- From 1970 to 1995, US adult population increased 50 percent and mail volume increased by 113 percent; forecasts indicate US population will grow 11 percent from 1995 to 2006. (34)
- USPS: pieces of mail per capita increasing at about 1%/year from 1995-1997. (34)
- Long-term efforts by combination carriers and freight forwarders to reduce market share losses to integrators are likely to be "too little too late" (36)

- The US Postal Service is diverting additional mail volumes away from U.S. passenger carriers and onto dedicated all-cargo flights, especially to enhance service levels for Priority Mail. (36)
- Domestic express market grew by 3%, 6%, 10%, 11% in 1998, 97, 96, 95 which is much lower than the 30% + annual rates of growth in the mid 1980s. (Note: The slowing of growth is reflected in the low stock price appreciation.) (36)
- Integrated operators are using more trucks than ever before. Using trucks, rather than airplanes, for “air” freight is a central feature (due to cost advantages) both in the use of regional hubs and the adoption of distance-based pricing by integrated operators. Integrated operators are increasingly using regional hubs and trucks for linehaul within a 300-400 mile radius of their air hubs as dictated by the relative operating economics of trucks versus aircraft. This trend is being driven in part because of legislation that took effect in Jan 1995 that totally deregulates intra-state trucking operations of the integrated carriers. (36)

E-Commerce

There is no consensus regarding the impact of the internet on the market for time-sensitive package delivery. Some data and opinions include the following:

- According to Forrester Research, \$80b in goods purchased over internet in 1998, expected to reach \$3.2b in 2003 (103%/year); 80-85% is business to business sales with remainder business to residential. (36)
- Internet increases number of shipments because more business is transacted in smaller lots. (13)
- Many of the larger internet sales firms are contracting with US Postal Service for delivery. (7)
- Business to business e-commerce is 10x greater than business-consumer market. Business-business sales forecast to top \$100 billion in 1999 and to reach \$1 trillion by 2003. Computers and electronics account for about half of the business-business market. (14)
- Internet should be acknowledged as a seismic shift in demand for transportation services affecting that demand in 3 ways: 1.) changing business-business and retail distribution with a related effect on transportation demand; 2.) Rise of E-mail and time-definite document delivery could impact shape of demand for air express delivery; 3.) Bid/auction pricing likely for air cargo markets likely to result in the elimination of traditional intermediaries such as small- and medium-sized forwarders. (36)
- 8% to 10% of FedEx’s revenue is from documents and letters, which is still growing; it doesn’t see a loss of market share to e-mail or Internet communications. (36)
- To illustrate growth in its online activity, UPS released the following statistics: Dec. 1995 was first month with 100,000 tracking requests; Dec. 1996 was first month with 1m requests; Dec. 1997 saw first 1m hit week; and Dec 22, 1998 saw first 1m hit day. (36)
- Some analysts predict that shipments to residential destinations will double in size within the next 5 years. (36)

- UPS has said it foresees the global electronic mail-order business growing to \$200b/yr in 2000 rising to \$800b in five years. (36)
- Analysts note that lower cost, deferred services seem most appropriate for delivery of goods purchased over the internet, which is consistent with the early success of UPS, USPS and RPS in delivering e-goods to residential customers. (36)
- In the long run, the true potential of e-commerce lies in business to business transactions. (36)
- UPS offers its Internet Delivery Service and predicts that it could eventually replace 30% of its document business in the future. Analysts question the long-term success of such a venture – few barriers to entry and many technology hurdles to providing guaranteed delivery. However, electronic document delivery by the internet could ultimately have a significant impact on the future demand for courier services. (36)
- Another internet-induced trend may be bid-based freight pricing – at least 3 companies already offer this service. (36)

Future Outlook

- Estimated that 46% of all goods in US will be shipped JIT by 2000 compared with 17% in 1994. (35)
- MergeGlobal Strategy Consultants in mid-1999 forecast air cargo growth of 6.2% annually through 2003. Growth driven from trend to outsourcing manufacturing, increasing world trade, and strong computer/electronics growth. (11)
- JIT and other factors are driving trend toward smaller, higher value shipments. In So. Cal alone, air cargo is forecast to increase from 3m tons to almost 9m tons from 1994-2020 (p. 15) (Calculates to 4.3% annual growth.) Rail intermodal is second fastest growing behind air; truck will see slow growth, general rail transport will continue to be important but will grow the least of all modes. (2)
- There is a continued increase in the use of deferred products versus premium products – customers are becoming more price sensitive. (36)
- FedEx and Airborne both expect U.S. domestic express package volume 1n 1999 to grow at slower rate than last two years. (36)

CALIFORNIA HIGH SPEED RAIL FREIGHT STUDY
Contact List

NUMBER	NAME/TITLE	ORGANIZATION	PHONE NUMBER OR E-MAIL	DATE CONTACTED
1	Linda Turnquist	CALTRANS	(916) 653-9367 - Julie Horner	9/21/1999
2	Lee Hibbets, Research Director	Air Cargo Management Group	(206) 587-6537	9/27/1999
3	Larry Blood	California Trucking Association (CALTRUX)	(209) 957-2456	10/4/1999
4	Stan Randolph	California Trucking Association (CALTRUX)	(209) 957-2456	10/7/1999
5	Juanita Cotson/ Freight Sales Service Specialist	FedEx	(800) 532-2364	10/13/99
6	Dr. Jess Browning/GTTL Director	University of WA	(206) 616-5736	10/13/99
7	Mark Horton/Director of Strategic Planning	UPS	(925) 277-2619	10/14/99
8	Mike Heilman	Airborne Express	Mike.Heilman@airborne.com	10/14/99
9	Michael McLary	Merge Global	(703) 276-9100	10/14/99
10	Fred Elliott	USPS	Contact Carol Ziegler @ (650) 615-7160	10/15/99

CALIFORNIA HIGH SPEED RAIL FREIGHT STUDY

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